

#8



# SEQUENCE LISTING

<110> EINAT, Paz  
SKALITER, Rami  
FEINSTEIN, Elena

<120> SEQUENCES CHARACTERISTIC OF HYPOXIA-REGULATED GENE TRANSCRIPTION

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<150> US 09/383,096

<151> 1999-08-27

<150> US 09/138,109

<151> 1998-08-21

<150> US 60/098,158

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<151> 1999-05-05

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| cgg agg cag ttt gaa ttc agt gta gat tct ttt caa atc aaa tta gac | 963  |
| Arg Arg Gln Phe Glu Phe Ser Val Asp Ser Phe Gln Ile Lys Leu Asp |      |
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| tct ctt ctg ctc ttt tat gaa tgt tca gag aac cca atg act gag aca | 1011 |
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| Phe His Pro Thr Ile Ile Gly Glu Ser Val Tyr Gly Asp Phe Gln Glu |      |
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| gcc ttt gat cac ctt tgt aac aag atc att gcc acc agg aac cca gag | 1107 |
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| Cys Ser Arg Phe Phe Ile Asp Phe Ser Asp Ile Gly Glu Gln Gln Arg |      |
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| Lys Leu Glu Ser Tyr Leu Gln Asn Leu Phe Val Gly Leu Glu Ala Arg |      |
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| Lys Tyr Glu Tyr Leu Met Thr Leu His Gly Val Val Asn Glu Ser Ser |      |
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Thr Leu Lys Glu Ala Tyr Val Gln Lys Met Val Lys Val Cys Asn Asp  
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Ser Asp Arg Trp Ser Leu Ile Ser Leu Ser Asn Asn Ser Gly Lys Asn  
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210 215 220

Val Asp Ser Phe Gln Ile Lys Leu Asp Ser Leu Leu Leu Phe Tyr Glu  
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Cys Ser Glu Asn Pro Met Thr Glu Thr Phe His Pro Thr Ile Ile Gly  
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Glu Ser Val Tyr Gly Asp Phe Gln Glu Ala Phe Asp His Leu Cys Asn  
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Asn Leu Phe Val Gly Leu Glu Ala Arg Lys Tyr Glu Tyr Leu Met Thr  
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| Glu Leu Lys Asp Tyr Leu Arg Phe Ala Pro Gly Gly Val Gly Asp Ser   |      |
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| ggc ccc gga gag gag cag agg gag agc cgg gct cgg cga ggc cct cga   | 448  |
| Gly Pro Gly Glu Glu Gln Arg Glu Ser Arg Ala Arg Arg Gly Pro Arg   |      |
| 30 35 40  |      |
| ggg ccc agc gcc ttc atc ccc gtg gag gag gtc ctt cgg gag ggg gct   | 496  |
| Gly Pro Ser Ala Phe Ile Pro Val Glu Glu Val Leu Arg Glu Gly Ala   |      |
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| cga gta gac aac ctg gca gtg gtg atg ggc ctg cac cct gac tac ttt   | 592  |
| Arg Val Asp Asn Leu Ala Val Val Met Gly Leu His Pro Asp Tyr Phe   |      |
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| acc agc ttc tgg cnc ctg cac tac ctg ctg ctg cac acg gat ggt ccc   | 640  |
| Thr Ser Phe Trp Xaa Leu His Tyr Leu Leu Leu His Thr Asp Gly Pro   |      |
| 95 100 105  |      |
| ttg gcc agc tcc tgg cgc cac tac att gcc atc atg gct gcc gcc cgc   | 688  |
| Leu Ala Ser Ser Trp Arg His Tyr Ile Ala Ile Met Ala Ala Ala Arg   |      |
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| cat cag tgt tct tac ctg gta ggc tcc cac atg gcc gag ttt ctg cag   | 736  |
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| aag ctg cgc aaa ctc agc gag atc aac aag ttg ctg gcg cat cgg cca   | 832  |
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| tgg ctc atc acc aag gaa cac atc cag gcc ttg ctg aag acc ggc gag   | 880  |
| Trp Leu Ile Thr Lys Glu His Ile Gln Ala Leu Leu Lys Thr Gly Glu   |      |
| 175 180 185   |      |
| cac act tgg tcc ctg gcc gag ctc att cag gct ctg gtc ctg ctc acc   | 928  |
| His Thr Trp Ser Leu Ala Glu Leu Ile Gln Ala Leu Val Leu Leu Thr   |      |
| 190 195 200   |      |
| cac tgc cac tcg ctc tcc tcc ttc gtg ttt ggc tgt ggc atc ctc cct   | 976  |
| His Cys His Ser Leu Ser Ser Phe Val Phe Gly Cys Gly Ile Leu Pro   |      |
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| gag ggg gat gca gat ggc agc cct gcc ccc cag gca cct aca ccc cct   | 1024 |
| Glu Gly Asp Ala Asp Gly Ser Pro Ala Pro Gln Ala Pro Thr Pro Pro   |      |

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| ggc ttt gag tct gcc cgc gac gtg gag gcg ctg atg gag cgc atg cag<br>Gly Phe Glu Ser Ala Arg Asp Val Glu Ala Leu Met Glu Arg Met Gln<br>255 260 265     |     |     | 1120 |
| cag ctg cag gag agc ctg ctg cgg gat gag ggg acg tcc cag gag gag<br>Gln Leu Gln Glu Ser Leu Leu Arg Asp Glu Gly Thr Ser Gln Glu Glu<br>270 275 280     |     |     | 1168 |
| atg gag agc cgc ttt gag ctg gag aag tca gag agc ctg ctg gtg acc<br>Met Glu Ser Arg Phe Glu Leu Glu Lys Ser Glu Ser Leu Leu Val Thr<br>285 290 295     |     |     | 1216 |
| ccc tca gct gac atc ctg gag ccc tct cca cac cca gac atg ctg tgc<br>Pro Ser Ala Asp Ile Leu Glu Pro Ser Pro His Pro Asp Met Leu Cys<br>300 305 310     |     |     | 1264 |
| ttt gtg gaa gac cct act ttc gga tat gag gac ttc act cgg aga ggg<br>Phe Val Glu Asp Pro Thr Phe Gly Tyr Glu Asp Phe Thr Arg Arg Gly<br>315 320 325 330 |     |     | 1312 |
| gct cag gca ccc cct acc ttc cgg gcc cag gat tat acc tgg gaa gac<br>Ala Gln Ala Pro Pro Thr Phe Arg Ala Gln Asp Tyr Thr Trp Glu Asp<br>335 340 345     |     |     | 1360 |
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| ctg gat gag aag ttc cag gca gcc tat agc ctc acc tac aat acc atc<br>Leu Asp Glu Lys Phe Gln Ala Ala Tyr Ser Leu Thr Tyr Asn Thr Ile<br>365 370 375     |     |     | 1456 |
| gcc atg cac agt ggt gtg gac acc tcc gtg ctc cgc agg gcc atc tgg<br>Ala Met His Ser Gly Val Asp Thr Ser Val Leu Arg Arg Ala Ile Trp<br>380 385 390     |     |     | 1504 |
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| ggg gag gtg aac cag ctc ctg gag cgg aac ctc aag gtc tat atc aag<br>Gly Glu Val Asn Gln Leu Leu Glu Arg Asn Leu Lys Val Tyr Ile Lys<br>415 420 425     |     |     | 1600 |
| aca gtg gcc tgc tac cca gag aag acc acc cga aga atg tac aac ctc<br>Thr Val Ala Cys Tyr Pro Glu Lys Thr Thr Arg Arg Met Tyr Asn Leu<br>430 435 440     |     |     | 1648 |
| ttc tgg agg cac ttc cgc cac tca gag aag gtc cac gtg aac ttg ctg<br>Phe Trp Arg His Phe Arg His Ser Glu Lys Val His Val Asn Leu Leu<br>445 450 455     |     |     | 1696 |



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| 460 465 470  |      |
| atc acc cgc tac atg acc tgactcctga gcaggacctg ggccccggttc          | 1792 |
| Ile Thr Arg Tyr Met Thr  |      |
| 475 480  |      |
| agctccccac aaggacttct ctgtctggag acagccccag acccttttgt gtcccatgcc  | 1852 |
| cacctcccc acgctgcagt gggcttgtgt gtgatgtgca gtcccgaagc cacaccctcc   | 1912 |
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| gggagctgga agagcacttg gagatcctaa gggaccacac ccttcctcct tcccctgccc  | 2032 |
| acagaggcag agggcacagg aaagaagccg ggccaagctc ggaattaatg tgccacaagt  | 2092 |
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| tacctctac ttgccattca cccatcaatg tgaaagtcag ggtcacagct ggtctgtgtg   | 2272 |
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 50 55 60

Leu Gly Leu Glu Ala Leu Met Ser Ser Gly Arg Val Asp Asn Leu Ala  
 65 70 75 80

Val Val Met Gly Leu His Pro Asp Tyr Phe Thr Ser Phe Trp Xaa Leu  
 85 90 95

His Tyr Leu Leu Leu His Thr Asp Gly Pro Leu Ala Ser Ser Trp Arg  
 100 105 110

His Tyr Ile Ala Ile Met Ala Ala Ala Arg His Gln Cys Ser Tyr Leu  
 115 120 125

Val Gly Ser His Met Ala Glu Phe Leu Gln Thr Gly Gly Asp Pro Glu  
 130 135 140

Trp Leu Leu Gly Leu His Arg Ala Pro Glu Lys Leu Arg Lys Leu Ser  
 145 150 155 160

Glu Ile Asn Lys Leu Leu Ala His Arg Pro Trp Leu Ile Thr Lys Glu  
165 170 175

His Ile Gln Ala Leu Leu Lys Thr Gly Glu His Thr Trp Ser Leu Ala  
180 185 190

Glu Leu Ile Gln Ala Leu Val Leu Leu Thr His Cys His Ser Leu Ser  
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Ser Phe Val Phe Gly Cys Gly Ile Leu Pro Glu Gly Asp Ala Asp Gly  
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Ser Pro Ala Pro Gln Ala Pro Thr Pro Pro Ser Glu Gln Ser Ser Pro  
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Asp Val Glu Ala Leu Met Glu Arg Met Gln Gln Leu Gln Glu Ser Leu  
260 265 270

Leu Arg Asp Glu Gly Thr Ser Gln Glu Glu Met Glu Ser Arg Phe Glu  
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290 295 300

Glu Pro Ser Pro His Pro Asp Met Leu Cys Phe Val Glu Asp Pro Thr  
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 Glu Lys Thr Thr Arg Arg Met Tyr Asn Leu Phe Trp Arg His Phe Arg  
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 His Ser Glu Lys Val His Val Asn Leu Leu Leu Leu Glu Ala Arg Met  
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| ccttctatgc caaagggaaa atgaaggaag taaaacagct tgtggctaac ttgcgtgggg   | 960  |
| aatccttatac atctggaaaag acagagacgt ggaatggcaa gttgctgaaa attccaccag | 1020 |
| tttctccctc tatcctcgac tgtagtataa tccgcgtgga atattcacta atggtatatg   | 1080 |
| tgatattcc tggagctatg gatttatttc ttaatttgcc acttgctatc ggtaccattc    | 1140 |
| ctctacatcc atttggtagc agaacctcaa gtgtaagcag tcagtgtagc atgaatatga   | 1200 |
| actggctcag tttatcactt cctgaaagac ctgaagcacc acccagctat gcagaagtgg   | 1260 |
| taacagagga acaaaggcgg aacaatcttg caccagtgaag tgcttgtgat gactttgaga  | 1320 |
| gagcccttca aggaccactg tttgcatata tccaggagtt tcgattcttg cctccacctc   | 1380 |
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| caattgtgga tttatttaca aacatcaaat gccttcaagc caatcctttt tgctgtatgt   | 2100 |
| tttgcagcct actgtagtag atacgcaaca gataatgtgg gaaaaaaaga gataagagga   | 2160 |
| ggaagctaata aagagactgt caagattgta taccttcttg gtttctttta agaatttggt  | 2220 |
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| gacatacaca aaagttagac acccacattc cctttttatc atgacataca agaagaaact   | 2460 |
| agcagagcta agaattggagt gaagaaaggc agtatggcag gcaccagcaa agagttgagg  | 2520 |
| gctgttgctc ttaaaaaatta ttttttttat tattattttg aaagtatgga agttttccat  | 2580 |
| tcactgggga aaggaggga aagtgcattt atttttatac agagttactt aattacctcc    | 2640 |

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| aaaacacata  | tgttggaat  | cgcttttgct  | ggtgcaaagt  | atattaatga | gcaggaatac  | 2700 |
| atacattgag  | gttatgaata | gagagctcaa  | tttgtacctt  | tgctgtcttg | ctcaagcttg  | 2760 |
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| cccagtgtaa  | aaatgaatcg | cgttttaagt  | gattcggkta  | aagagtttgg | gctcccgtag  | 3420 |
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35 40 45  
Pro Glu Asn Tyr Val Pro Thr Val Phe Glu Asn Tyr Thr Ala Ser Phe  
50 55 60  
Glu Ile Asp Thr Gln Arg Ile Glu Leu Ser Leu Trp Asp Thr Ser Gly  
65 70 75 80  
Ser Pro Tyr Tyr Asp Asn Val Arg Pro Leu Ser Tyr Pro Asp Ser Asp  
85 90 95  
Ala Val Leu Ile Cys Phe Asp Ile Ser Arg Pro Glu Thr Leu Asp Ser  
100 105 110  
Val Leu Lys Lys Trp Xaa Gly Glu Ile Gln Glu Phe Cys Pro Asn Thr  
115 120 125  
Lys Met Leu Leu Val Gly Cys Lys Ser Asp Leu Arg Thr Asp Val Ser  
130 135 140  
Thr Leu Val Glu Leu Ser Asn His Arg Gln Thr Pro Val Ser Tyr Asp  
145 150 155 160  
Gln Gly Ala Asn Met Ala Lys Gln Ile Gly Ala Ala Thr Tyr Ile Glu  
165 170 175  
Cys Ser Ala Leu Gln Ser Glu Asn Ser Val Arg Asp Ile Phe His Val  
180 185 190  
Ala Thr Leu Ala Cys Val Asn Lys Thr Asn Lys Asn Val Lys Arg Asn  
195 200 205  
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| 1 5 10 15   |     |
| ctc cac ccc tgg aat ccc tgt ctg ggt gcg gac tcg gag aag ccc tcg | 96  |
| Leu His Pro Trp Asn Pro Cys Leu Gly Ala Asp Ser Glu Lys Pro Ser |     |
| 20 25 30  |     |
| agc atc ccc aca gat aaa tta tta gtc ata act gta gca aca aaa gaa | 144 |
| Ser Ile Pro Thr Asp Lys Leu Leu Val Ile Thr Val Ala Thr Lys Glu |     |
| 35 40 45  |     |
| agt gat gga ttc cat cga ttt atg cag tca gcc aaa tat ttc aat tat | 192 |
| Ser Asp Gly Phe His Arg Phe Met Gln Ser Ala Lys Tyr Phe Asn Tyr |     |
| 50 55 60  |     |
| act gtg aag gtc ctt ggt caa gga gaa gaa tgg aga ggt ggt gat gga | 240 |
| Thr Val Lys Val Leu Gly Gln Gly Glu Glu Trp Arg Gly Gly Asp Gly |     |
| 65 70 75 80   |     |
| att aat agt att gga ggg ggc cag aaa gtg aga tta atg aaa gaa gtc | 288 |
| Ile Asn Ser Ile Gly Gly Gly Gln Lys Val Arg Leu Met Lys Glu Val |     |
| 85 90 95  |     |
| atg gaa cac tat gct gat caa gat gat ctg gtt gtc atg ttt act gaa | 336 |
| Met Glu His Tyr Ala Asp Gln Asp Asp Leu Val Val Met Phe Thr Glu |     |
| 100 105 110   |     |
| tgc ttt gat gtc ata ttt gct ggt ggt cca gaa gaa gtt cta aaa aaa | 384 |
| Cys Phe Asp Val Ile Phe Ala Gly Gly Pro Glu Glu Val Leu Lys Lys |     |
| 115 120 125   |     |
| ttc caa aag gca aac cac aaa gtg gtc ttt gca gca gat gga att ttg | 432 |
| Phe Gln Lys Ala Asn His Lys Val Val Phe Ala Ala Asp Gly Ile Leu |     |
| 130 135 140   |     |
| tgg cca gat aaa aga cta gca gac aag tat cct gtt gtg cac att ggg | 480 |
| Trp Pro Asp Lys Arg Leu Ala Asp Lys Tyr Pro Val Val His Ile Gly |     |
| 145 150 155 160   |     |
| aaa cgc tat ctg aat tca gga gga ttt att ggc tat gct cca tat gtc | 528 |
| Lys Arg Tyr Leu Asn Ser Gly Gly Phe Ile Gly Tyr Ala Pro Tyr Val |     |
| 165 170 175   |     |
| aac cgt ata gtt caa caa tgg aat ctc cag gat aat gat gat gat cag | 576 |
| Asn Arg Ile Val Gln Gln Trp Asn Leu Gln Asp Asn Asp Asp Asp Gln |     |
| 180 185 190   |     |
| ctc ttt tac act aaa gtt tac att gat cca ctg aaa agg gaa gct att | 624 |
| Leu Phe Tyr Thr Lys Val Tyr Ile Asp Pro Leu Lys Arg Glu Ala Ile |     |
| 195 200 205   |     |
| aac atc aca ttg gat cac aaa tgc aaa att ttc cag acc tta aat gga | 672 |
| Asn Ile Thr Leu Asp His Lys Cys Lys Ile Phe Gln Thr Leu Asn Gly |     |
| 210 215 220   |     |

|   |      |
|---|------|
| gct gta gat gaa gtt gtt tta aaa ttt gaa aat ggc aaa gcc aga gct<br>Ala Val Asp Glu Val Val Leu Lys Phe Glu Asn Gly Lys Ala Arg Ala<br>225 230 235 240 | 720  |
| aag aat aca ttt tat gaa aca tta cca gtg gca att aat gga aat gga<br>Lys Asn Thr Phe Tyr Glu Thr Leu Pro Val Ala Ile Asn Gly Asn Gly<br>245 250 255     | 768  |
| ccc acc aag att ctc ctg aat tat ttt gga aac tat gta ccc aat tca<br>Pro Thr Lys Ile Leu Leu Asn Tyr Phe Gly Asn Tyr Val Pro Asn Ser<br>260 265 270     | 816  |
| tgg aca cag gat aat ggc tgc act ctt tgt gaa ttc gat aca gtc gac<br>Trp Thr Gln Asp Asn Gly Cys Thr Leu Cys Glu Phe Asp Thr Val Asp<br>275 280 285     | 864  |
| ttg tct gca gta gat gtc cat cca aac gta tca ata ggt gtt ttt att<br>Leu Ser Ala Val Asp Val His Pro Asn Val Ser Ile Gly Val Phe Ile<br>290 295 300     | 912  |
| gag caa cca acc cct ttt cta cct cgg ttt ctg gac ata ttg ttg aca<br>Glu Gln Pro Thr Pro Phe Leu Pro Arg Phe Leu Asp Ile Leu Leu Thr<br>305 310 315 320 | 960  |
| ctg gat tac cca aaa gaa gca ctt aaa ctt ttt att cat aac aaa gaa<br>Leu Asp Tyr Pro Lys Glu Ala Leu Lys Leu Phe Ile His Asn Lys Glu<br>325 330 335     | 1008 |
| gtt tat cat gaa aag gac atc aag gta ttt ttt gat aaa gct aag cat<br>Val Tyr His Glu Lys Asp Ile Lys Val Phe Phe Asp Lys Ala Lys His<br>340 345 350     | 1056 |
| gaa atc aaa act ata aaa ata gta gga cca gaa gaa aat cta agt caa<br>Glu Ile Lys Thr Ile Lys Ile Val Gly Pro Glu Glu Asn Leu Ser Gln<br>355 360 365     | 1104 |
| gcg gaa gcc aga aac atg gga atg gac ttt tgc cgt cag gat gaa aag<br>Ala Glu Ala Arg Asn Met Gly Met Asp Phe Cys Arg Gln Asp Glu Lys<br>370 375 380     | 1152 |
| tgt gat tat tac ttt agt gtg gat gca gat gtt gtt ttg aca aat cca<br>Cys Asp Tyr Tyr Phe Ser Val Asp Ala Asp Val Val Leu Thr Asn Pro<br>385 390 395 400 | 1200 |
| agg act tta aaa att ttg att gaa caa aac aga aag atc att gct cct<br>Arg Thr Leu Lys Ile Leu Ile Glu Gln Asn Arg Lys Ile Ile Ala Pro<br>405 410 415     | 1248 |
| ctt gta act cgt cat gga aag ctg. tgg tcc aat ttc tgg gga gca ttg<br>Leu Val Thr Arg His Gly Lys Leu Trp Ser Asn Phe Trp Gly Ala Leu<br>420 425 430    | 1296 |
| agt cct gat gga tac tat gca cga tct gaa gat tat gtg gat att gtt<br>Ser Pro Asp Gly Tyr Tyr Ala Arg Ser Glu Asp Tyr Val Asp Ile Val<br>435 440 445     | 1344 |
| caa ggg aat aga gta gga gta tgg aat gtc cca tat atg gct aat gtg<br>Gln Gly Asn Arg Val Gly Val Trp Asn Val Pro Tyr Met Ala Asn Val<br>450 455 460     | 1392 |

| 450   | 455 | 460 |      |
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| tac tta att aaa gga aag aca ctc cga tca gag atg aat gaa agg aac |     |     | 1440 |
| Tyr Leu Ile Lys Gly Lys Thr Leu Arg Ser Glu Met Asn Glu Arg Asn |     |     |      |
| 465   | 470 | 475 | 480  |
| tat ttt gtt cgt gat aaa ctg gat cct gat atg gct ctt tgc cga aat |     |     | 1488 |
| Tyr Phe Val Arg Asp Lys Leu Asp Pro Asp Met Ala Leu Cys Arg Asn |     |     |      |
|   | 485 | 490 | 495  |
| gct aga gaa atg act tta caa agg gaa aaa gac tcc cct act ccg gaa |     |     | 1536 |
| Ala Arg Glu Met Thr Leu Gln Arg Glu Lys Asp Ser Pro Thr Pro Glu |     |     |      |
|   | 500 | 505 | 510  |
| aca ttc caa atg ctc agc ccc cca aag ggt gta ttt atg tac att tct |     |     | 1584 |
| Thr Phe Gln Met Leu Ser Pro Pro Lys Gly Val Phe Met Tyr Ile Ser |     |     |      |
|   | 515 | 520 | 525  |
| aat aga cat gaa ttt gga agg cta tta tcc act gct aat tac aat act |     |     | 1632 |
| Asn Arg His Glu Phe Gly Arg Leu Leu Ser Thr Ala Asn Tyr Asn Thr |     |     |      |
|   | 530 | 535 | 540  |
| tcc cat tat aac aat gac ctc tgg cag att ttt gaa aat cct gtg gac |     |     | 1680 |
| Ser His Tyr Asn Asn Asp Leu Trp Gln Ile Phe Glu Asn Pro Val Asp |     |     |      |
| 545   | 550 | 555 | 560  |
| tgg aag gaa aag tat ata aac cgt gat tat tca aag att ttc act gaa |     |     | 1728 |
| Trp Lys Glu Lys Tyr Ile Asn Arg Asp Tyr Ser Lys Ile Phe Thr Glu |     |     |      |
|   | 565 | 570 | 575  |
| aat ata gtt gaa cag ccc tgt cca gat gtc ttt tgg ttc ccc ata ttt |     |     | 1776 |
| Asn Ile Val Glu Gln Pro Cys Pro Asp Val Phe Trp Phe Pro Ile Phe |     |     |      |
|   | 580 | 585 | 590  |
| tct gaa aaa gcc tgt gat gaa ttg gta gaa gaa atg gaa cat tac ggc |     |     | 1824 |
| Ser Glu Lys Ala Cys Asp Glu Leu Val Glu Glu Met Glu His Tyr Gly |     |     |      |
|   | 595 | 600 | 605  |
| aaa tgg tct ggg gga aaa cat cat gat agc cgt ata tct ggt ggt tat |     |     | 1872 |
| Lys Trp Ser Gly Gly Lys His His Asp Ser Arg Ile Ser Gly Gly Tyr |     |     |      |
|   | 610 | 615 | 620  |
| gaa aat gtc cca act gat gat atc cac atg aag caa gtt gat ctg gag |     |     | 1920 |
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|   | 625 | 630 | 635  |
| aat gta tgg ctt cat ttt atc cgg gag ttc att gca cca gtt aca ctg |     |     | 1968 |
| Asn Val Trp Leu His Phe Ile Arg Glu Phe Ile Ala Pro Val Thr Leu |     |     |      |
|   | 645 | 650 | 655  |
| aag gtc ttt gca ggc tat tat acg aag gga ttt gca cta ctg aat ttt |     |     | 2016 |
| Lys Val Phe Ala Gly Tyr Tyr Thr Lys Gly Phe Ala Leu Leu Asn Phe |     |     |      |
|   | 660 | 665 | 670  |
| gta gta aaa tac tcc cct gaa cga cag cgt tct ctt cgt cct cat cat |     |     | 2064 |
| Val Val Lys Tyr Ser Pro Glu Arg Gln Arg Ser Leu Arg Pro His His |     |     |      |
|   | 675 | 680 | 685  |

gat gct tct aca ttt acc ata aac att gca ctt aat aac gtg gga gaa 2112  
 Asp Ala Ser Thr Phe Thr Ile Asn Ile Ala Leu Asn Asn Val Gly Glu  
 690 695 700

gac ttt cag gga ggt ggt tgc aaa ttt cta agg tac aat tgc tct att 2160  
 Asp Phe Gln Gly Gly Gly Cys Lys Phe Leu Arg Tyr Asn Cys Ser Ile  
 705 710 715 720

gag tca cca cga aaa ggc tgg agc ttc atg cat cct ggg aga ctc aca 2208  
 Glu Ser Pro Arg Lys Gly Trp Ser Phe Met His Pro Gly Arg Leu Thr  
 725 730 735

cat ttg cat gaa gga ctt cct gtt aaa aat gga aca aga tac att gca 2256  
 His Leu His Glu Gly Leu Pro Val Lys Asn Gly Thr Arg Tyr Ile Ala  
 740 745 750

gtg tca ttt ata gat ccc taagttatatt acttttcatt gaattgaaat 2304  
 Val Ser Phe Ile Asp Pro  
 755

ttatttttga tgaatgactg gcatgaacac gtctttgaag ttgtggctga gaagatgaga 2364

ggaatattta aataacatca acagaacaac ttcactttgg gccaaacatt tgaaaaactt 2424

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Leu His Pro Trp Asn Pro Cys Leu Gly Ala Asp Ser Glu Lys Pro Ser  
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Ser Ile Pro Thr Asp Lys Leu Leu Val Ile Thr Val Ala Thr Lys Glu  
 35 40 45

Ser Asp Gly Phe His Arg Phe Met Gln Ser Ala Lys Tyr Phe Asn Tyr  
 50 55 60

Thr Val Lys Val Leu Gly Gln Gly Glu Glu Trp Arg Gly Gly Asp Gly  
 65 70 75 80

Ile Asn Ser Ile Gly Gly Gly Gln Lys Val Arg Leu Met Lys Glu Val  
 85 90 95

Met Glu His Tyr Ala Asp Gln Asp Asp Leu Val Val Met Phe Thr Glu  
 100 105 110

Cys Phe Asp Val Ile Phe Ala Gly Gly Pro Glu Glu Val Leu Lys Lys  
 115 120 125

Phe Gln Lys Ala Asn His Lys Val Val Phe Ala Ala Asp Gly Ile Leu  
 130 135 140

Trp Pro Asp Lys Arg Leu Ala Asp Lys Tyr Pro Val Val His Ile Gly  
 145 150 155 160

Lys Arg Tyr Leu Asn Ser Gly Gly Phe Ile Gly Tyr Ala Pro Tyr Val  
 165 170 175

Asn Arg Ile Val Gln Gln Trp Asn Leu Gln Asp Asn Asp Asp Asp Gln  
 180 185 190

Leu Phe Tyr Thr Lys Val Tyr Ile Asp Pro Leu Lys Arg Glu Ala Ile  
 195 200 205

Asn Ile Thr Leu Asp His Lys Cys Lys Ile Phe Gln Thr Leu Asn Gly  
 210 215 220

Ala Val Asp Glu Val Val Leu Lys Phe Glu Asn Gly Lys Ala Arg Ala  
 225 230 235 240

Lys Asn Thr Phe Tyr Glu Thr Leu Pro Val Ala Ile Asn Gly Asn Gly  
 245 250 255

Pro Thr Lys Ile Leu Leu Asn Tyr Phe Gly Asn Tyr Val Pro Asn Ser  
 260 265 270

Trp Thr Gln Asp Asn Gly Cys Thr Leu Cys Glu Phe Asp Thr Val Asp  
 275 280 285

Leu Ser Ala Val Asp Val His Pro Asn Val Ser Ile Gly Val Phe Ile  
 290 295 300

Glu Gln Pro Thr Pro Phe Leu Pro Arg Phe Leu Asp Ile Leu Leu Thr  
 305 310 315 320

Leu Asp Tyr Pro Lys Glu Ala Leu Lys Leu Phe Ile His Asn Lys Glu  
 325 330 335

Val Tyr His Glu Lys Asp Ile Lys Val Phe Phe Asp Lys Ala Lys His  
 340 345 350

Glu Ile Lys Thr Ile Lys Ile Val Gly Pro Glu Glu Asn Leu Ser Gln  
 355 360 365

Ala Glu Ala Arg Asn Met Gly Met Asp Phe Cys Arg Gln Asp Glu Lys  
 370 375 380

Cys Asp Tyr Tyr Phe Ser Val Asp Ala Asp Val Val Leu Thr Asn Pro  
 385 390 395 400

Arg Thr Leu Lys Ile Leu Ile Glu Gln Asn Arg Lys Ile Ile Ala Pro  
 405 410 415

Leu Val Thr Arg His Gly Lys Leu Trp Ser Asn Phe Trp Gly Ala Leu  
 420 425 430

Ser Pro Asp Gly Tyr Tyr Ala Arg Ser Glu Asp Tyr Val Asp Ile Val  
 435 440 445

Gln Gly Asn Arg Val Gly Val Trp Asn Val Pro Tyr Met Ala Asn Val  
 450 455 460

Tyr Leu Ile Lys Gly Lys Thr Leu Arg Ser Glu Met Asn Glu Arg Asn  
 465 470 475 480

Tyr Phe Val Arg Asp Lys Leu Asp Pro Asp Met Ala Leu Cys Arg Asn  
 485 490 495

Ala Arg Glu Met Thr Leu Gln Arg Glu Lys Asp Ser Pro Thr Pro Glu  
 500 505 510

Thr Phe Gln Met Leu Ser Pro Pro Lys Gly Val Phe Met Tyr Ile Ser  
 515 520 525

Asn Arg His Glu Phe Gly Arg Leu Leu Ser Thr Ala Asn Tyr Asn Thr  
 530 535 540

Ser His Tyr Asn Asn Asp Leu Trp Gln Ile Phe Glu Asn Pro Val Asp  
 545 550 555 560

Trp Lys Glu Lys Tyr Ile Asn Arg Asp Tyr Ser Lys Ile Phe Thr Glu  
565 570 575

Asn Ile Val Glu Gln Pro Cys Pro Asp Val Phe Trp Phe Pro Ile Phe  
580 585 590

Ser Glu Lys Ala Cys Asp Glu Leu Val Glu Glu Met Glu His Tyr Gly  
595 600 605

Lys Trp Ser Gly Gly Lys His His Asp Ser Arg Ile Ser Gly Gly Tyr  
610 615 620

Glu Asn Val Pro Thr Asp Asp Ile His Met Lys Gln Val Asp Leu Glu  
625 630 635 640

Asn Val Trp Leu His Phe Ile Arg Glu Phe Ile Ala Pro Val Thr Leu  
645 650 655

Lys Val Phe Ala Gly Tyr Tyr Thr Lys Gly Phe Ala Leu Leu Asn Phe  
660 665 670

Val Val Lys Tyr Ser Pro Glu Arg Gln Arg Ser Leu Arg Pro His His  
675 680 685

Asp Ala Ser Thr Phe Thr Ile Asn Ile Ala Leu Asn Asn Val Gly Glu  
690 695 700

Asp Phe Gln Gly Gly Gly Cys Lys Phe Leu Arg Tyr Asn Cys Ser Ile  
705 710 715 720

Glu Ser Pro Arg Lys Gly Trp Ser Phe Met His Pro Gly Arg Leu Thr  
725 730 735

His Leu His Glu Gly Leu Pro Val Lys Asn Gly Thr Arg Tyr Ile Ala  
740 745 750

Val Ser Phe Ile Asp Pro  
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<220>



<221> CDS

<222> (1)..(2211)

<400> 10

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| atg | ggg | gga | tgc | acg | gtg | aag | cct | cag | ctg | ctg | ctc | ctg | gcg | ctc | gtc | 48 |
| Met | Gly | Gly | Cys | Thr | Val | Lys | Pro | Gln | Leu | Leu | Leu | Leu | Ala | Leu | Val |    |
| 1   |     |     |     | 5   |     |     |     |     | 10  |     |     |     |     | 15  |     |    |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |    |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|
| ctc | cac | ccc | tgg | aat | ccc | tgt | ctg | ggg | gcg | gac | tcg | gag | aag | ccc | tcg | 96 |
| Leu | His | Pro | Trp | Asn | Pro | Cys | Leu | Gly | Ala | Asp | Ser | Glu | Lys | Pro | Ser |    |
|     |     |     | 20  |     |     |     |     | 25  |     |     |     |     | 30  |     |     |    |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| agc | atc | ccc | aca | gat | aaa | tta | tta | gtc | ata | act | gta | gca | aca | aaa | gaa | 144 |
| Ser | Ile | Pro | Thr | Asp | Lys | Leu | Leu | Val | Ile | Thr | Val | Ala | Thr | Lys | Glu |     |
|     |     | 35  |     |     |     |     | 40  |     |     |     |     | 45  |     |     |     |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| agt | gat | gga | ttc | cat | cga | ttt | atg | cag | tca | gcc | aaa | tat | ttc | aat | tat | 192 |
| Ser | Asp | Gly | Phe | His | Arg | Phe | Met | Gln | Ser | Ala | Lys | Tyr | Phe | Asn | Tyr |     |
|     | 50  |     |     |     |     | 55  |     |     |     |     | 60  |     |     |     |     |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| act | gtg | aag | gtc | ctt | ggg | caa | gga | gaa | gaa | tgg | aga | ggg | ggg | gat | gga | 240 |
| Thr | Val | Lys | Val | Leu | Gly | Gln | Gly | Glu | Glu | Trp | Arg | Gly | Gly | Asp | Gly |     |
| 65  |     |     |     | 70  |     |     |     | 75  |     |     |     |     |     | 80  |     |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| att | aat | agt | att | gga | ggg | ggc | cag | aaa | gtg | aga | tta | atg | aaa | gaa | gtc | 288 |
| Ile | Asn | Ser | Ile | Gly | Gly | Gly | Gln | Lys | Val | Arg | Leu | Met | Lys | Glu | Val |     |
|     |     |     |     | 85  |     |     |     | 90  |     |     |     |     |     | 95  |     |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| atg | gaa | cac | tat | gct | gat | caa | gat | gat | ctg | gtt | gtc | atg | ttt | act | gaa | 336 |
| Met | Glu | His | Tyr | Ala | Asp | Gln | Asp | Asp | Leu | Val | Val | Met | Phe | Thr | Glu |     |
|     |     |     | 100 |     |     |     |     | 105 |     |     |     |     |     | 110 |     |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| tgc | ttt | gat | gtc | ata | ttt | gct | ggg | ggg | cca | gaa | gaa | gtt | cta | aaa | aaa | 384 |
| Cys | Phe | Asp | Val | Ile | Phe | Ala | Gly | Gly | Pro | Glu | Glu | Val | Leu | Lys | Lys |     |
|     |     | 115 |     |     |     |     | 120 |     |     |     |     | 125 |     |     |     |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| ttc | caa | aag | gca | aac | cac | aaa | gtg | gtc | ttt | gca | gca | gat | gga | att | ttg | 432 |
| Phe | Gln | Lys | Ala | Asn | His | Lys | Val | Val | Phe | Ala | Ala | Asp | Gly | Ile | Leu |     |
|     | 130 |     |     |     |     | 135 |     |     |     |     | 140 |     |     |     |     |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| tgg | cca | gat | aaa | aga | cta | gca | gac | aag | tat | cct | gtt | gtg | cac | att | ggg | 480 |
| Trp | Pro | Asp | Lys | Arg | Leu | Ala | Asp | Lys | Tyr | Pro | Val | Val | His | Ile | Gly |     |
| 145 |     |     |     |     | 150 |     |     |     |     | 155 |     |     |     |     | 160 |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| aaa | cgc | tat | ctg | aat | tca | gga | gga | ttt | att | ggc | tat | gct | cca | tat | gtc | 528 |
| Lys | Arg | Tyr | Leu | Asn | Ser | Gly | Gly | Phe | Ile | Gly | Tyr | Ala | Pro | Tyr | Val |     |
|     |     |     |     | 165 |     |     |     |     | 170 |     |     |     |     | 175 |     |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| aac | cgt | ata | gtt | caa | caa | tgg | aat | ctc | cag | gat | aat | gat | gat | gat | cag | 576 |
| Asn | Arg | Ile | Val | Gln | Gln | Trp | Asn | Leu | Gln | Asp | Asn | Asp | Asp | Asp | Gln |     |
|     |     |     | 180 |     |     |     |     | 185 |     |     |     |     |     | 190 |     |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| ctc | ttt | tac | act | aaa | gtt | tac | att | gat | cca | ctg | aaa | agg | gaa | gct | att | 624 |
| Leu | Phe | Tyr | Thr | Lys | Val | Tyr | Ile | Asp | Pro | Leu | Lys | Arg | Glu | Ala | Ile |     |
|     |     | 195 |     |     |     |     | 200 |     |     |     |     | 205 |     |     |     |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| aac | atc | aca | ttg | gat | cac | aaa | tgc | aaa | att | ttc | cag | acc | tta | aat | gga | 672 |
| Asn | Ile | Thr | Leu | Asp | His | Lys | Cys | Lys | Ile | Phe | Gln | Thr | Leu | Asn | Gly |     |

| 210   | 215 | 220 |      |
|---|-----|-----|------|
| gct gta gat gaa gtt gtt tta aaa ttt gaa aat ggc aaa gcc aga gct<br>Ala Val Asp Glu Val Val Leu Lys Phe Glu Asn Gly Lys Ala Arg Ala<br>225 230 235 240 |     |     | 720  |
| aag aat aca ttt tat gaa aca tta cca gtg gca att aat gga aat gga<br>Lys Asn Thr Phe Tyr Glu Thr Leu Pro Val Ala Ile Asn Gly Asn Gly<br>245 250 255     |     |     | 768  |
| ccc acc aag att ctc ctg aat tat ttt gga aac tat gta ccc aat tca<br>Pro Thr Lys Ile Leu Leu Asn Tyr Phe Gly Asn Tyr Val Pro Asn Ser<br>260 265 270     |     |     | 816  |
| tgg aca cag gat aat ggc tgc act ctt tgt gaa ttc gat aca gtc gac<br>Trp Thr Gln Asp Asn Gly Cys Thr Leu Cys Glu Phe Asp Thr Val Asp<br>275 280 285     |     |     | 864  |
| ttg tct gca gta gat gtc cat cca aac gta tca ata ggt gtt ttt att<br>Leu Ser Ala Val Asp Val His Pro Asn Val Ser Ile Gly Val Phe Ile<br>290 295 300     |     |     | 912  |
| gag caa cca acc cct ttt cta cct cgg ttt ctg gac ata ttg ttg aca<br>Glu Gln Pro Thr Pro Phe Leu Pro Arg Phe Leu Asp Ile Leu Leu Thr<br>305 310 315 320 |     |     | 960  |
| ctg gat tac cca aaa gaa gca ctt aaa ctt ttt att cat aac aaa gaa<br>Leu Asp Tyr Pro Lys Glu Ala Leu Lys Leu Phe Ile His Asn Lys Glu<br>325 330 335     |     |     | 1008 |
| gtt tat cat gaa aag gac atc aag gta ttt ttt gat aaa gct aag cat<br>Val Tyr His Glu Lys Asp Ile Lys Val Phe Phe Asp Lys Ala Lys His<br>340 345 350     |     |     | 1056 |
| gaa atc aaa act ata aaa ata gta gga cca gaa gaa aat cta agt caa<br>Glu Ile Lys Thr Ile Lys Ile Val Gly Pro Glu Glu Asn Leu Ser Gln<br>355 360 365     |     |     | 1104 |
| gcg gaa gcc aga aac atg gga atg gac ttt tgc cgt cag gat gaa aag<br>Ala Glu Ala Arg Asn Met Gly Met Asp Phe Cys Arg Gln Asp Glu Lys<br>370 375 380     |     |     | 1152 |
| tgt gat tat tac ttt agt gtg gat gca gat gtt gtt ttg aca aat cca<br>Cys Asp Tyr Tyr Phe Ser Val Asp Ala Asp Val Val Leu Thr Asn Pro<br>385 390 395 400 |     |     | 1200 |
| agg act tta aaa att ttg att gaa caa aac aga aag atc att gct cct<br>Arg Thr Leu Lys Ile Leu Ile Glu Gln Asn Arg Lys Ile Ile Ala Pro<br>405 410 415     |     |     | 1248 |
| ctt gta act cgt cat gga aag ctg tgg tcc aat ttc tgg gga gca ttg<br>Leu Val Thr Arg His Gly Lys Leu Trp Ser Asn Phe Trp Gly Ala Leu<br>420 425 430     |     |     | 1296 |
| agt cct gat gga tac tat gca cga tct gaa gat tat gtg gat att gtt<br>Ser Pro Asp Gly Tyr Tyr Ala Arg Ser Glu Asp Tyr Val Asp Ile Val<br>435 440 445     |     |     | 1344 |

|   |      |
|---|------|
| caa ggg aat aga gta gga gta tgg aat gtc cca tat atg gct aat gtg<br>Gln Gly Asn Arg Val Gly Val Trp Asn Val Pro Tyr Met Ala Asn Val<br>450 455 460     | 1392 |
| tac tta att aaa gga aag aca ctc cga tca gag atg aat gaa agg aac<br>Tyr Leu Ile Lys Gly Lys Thr Leu Arg Ser Glu Met Asn Glu Arg Asn<br>465 470 475 480 | 1440 |
| tat ttt gtt cgt gat aaa ctg gat cct gat atg gct ctt tgc cga aat<br>Tyr Phe Val Arg Asp Lys Leu Asp Pro Asp Met Ala Leu Cys Arg Asn<br>485 490 495     | 1488 |
| gct aga gaa atg act tta caa agg gaa aaa gac tcc cct act ccg gaa<br>Ala Arg Glu Met Thr Leu Gln Arg Glu Lys Asp Ser Pro Thr Pro Glu<br>500 505 510     | 1536 |
| aca ttc caa atg ctc agc ccc cca aag ggt gta ttt atg tac att tct<br>Thr Phe Gln Met Leu Ser Pro Lys Gly Val Phe Met Tyr Ile Ser<br>515 520 525         | 1584 |
| aat aga cat gaa ttt gga agg cta tta tcc act gct aat tac aat act<br>Asn Arg His Glu Phe Gly Arg Leu Leu Ser Thr Ala Asn Tyr Asn Thr<br>530 535 540     | 1632 |
| tcc cat tat aac aat gac ctc tgg cag att ttt gaa aat cct gtg gac<br>Ser His Tyr Asn Asn Asp Leu Trp Gln Ile Phe Glu Asn Pro Val Asp<br>545 550 555 560 | 1680 |
| tgg aag gaa aag tat ata aac cgt gat tat tca aag att ttc act gaa<br>Trp Lys Glu Lys Tyr Ile Asn Arg Asp Tyr Ser Lys Ile Phe Thr Glu<br>565 570 575     | 1728 |
| aat ata gtt gaa cag ccc tgt cca gat gtc ttt tgg ttc ccc ata ttt<br>Asn Ile Val Glu Gln Pro Cys Pro Asp Val Phe Trp Phe Pro Ile Phe<br>580 585 590     | 1776 |
| tct gaa aaa gcc tgt gat gaa ttg gta gaa gaa atg gaa cat tac ggc<br>Ser Glu Lys Ala Cys Asp Glu Leu Val Glu Glu Met Glu His Tyr Gly<br>595 600 605     | 1824 |
| aaa tgg tct ggg gga aaa cat cat gat agc cgt ata tct ggt ggt tat<br>Lys Trp Ser Gly Gly Lys His His Asp Ser Arg Ile Ser Gly Gly Tyr<br>610 615 620     | 1872 |
| gaa aat gtc cca act gat gat atc cac atg aag caa gtt gat ctg gag<br>Glu Asn Val Pro Thr Asp Asp Ile His Met Lys Gln Val Asp Leu Glu<br>625 630 635 640 | 1920 |
| aat gta tgg ctt cat ttt atc cgg gag ttc att gca cca gtt aca ctg<br>Asn Val Trp Leu His Phe Ile Arg Glu Phe Ile Ala Pro Val Thr Leu<br>645 650 655     | 1968 |
| aag gtc ttt gca ggc tat tat acg aag gga ttt gca cta ctg aat ttt<br>Lys Val Phe Ala Gly Tyr Tyr Thr Lys Gly Phe Ala Leu Leu Asn Phe<br>660 665 670     | 2016 |
| gta gta aaa tac tcc cct gaa cga cag cgt tct ctt cgt cct cat cat<br>Val Val Lys Tyr Ser Pro Glu Arg Gln Arg Ser Leu Arg Pro His His                    | 2064 |

| 675   | 680 | 685 |      |
|---|-----|-----|------|
| gat gct tct aca ttt acc ata aac att gca ctt aat aac gtg gga gaa   |     |     | 2112 |
| Asp Ala Ser Thr Phe Thr Ile Asn Ile Ala Leu Asn Asn Val Gly Glu   |     |     |      |
| 690   | 695 | 700 |      |
| gac ttt cag gga ggt ggt tgc aaa ttt cta agg tac aat tgc tct att   |     |     | 2160 |
| Asp Phe Gln Gly Gly Gly Cys Lys Phe Leu Arg Tyr Asn Cys Ser Ile   |     |     |      |
| 705   | 710 | 715 | 720  |
| gag tca cca cga aaa ggc tgg agc ttc atg cat cct ggg aga ctc aca   |     |     | 2208 |
| Glu Ser Pro Arg Lys Gly Trp Ser Phe Met His Pro Gly Arg Leu Thr   |     |     |      |
| 725   | 730 | 735 |      |
| cat ttgcatgaag gacttcctgt taaaaatgga acaagataca ttgcagtgtc        |     |     | 2261 |
| His   |     |     |      |
| atttatagat ccctaagtta ttactttttc attgaattga aatttatttt ggatgaatga |     |     | 2321 |
| ctggcatgaa cacgtctttg aagttgtggc tgagaagatg agaggaatat ttaaataaca |     |     | 2381 |
| tcaacagaac aacttcactt tgggccaaac atttgaaaaa ctttttataa aaaattgttt |     |     | 2441 |
| gatattttctt aatgtctgct ctgagcctta aaacacag                        |     |     | 2479 |
| <210> 11  |     |     |      |
| <211> 737   |     |     |      |
| <212> PRT   |     |     |      |
| <213> Homo sapiens  |     |     |      |
| <400> 11  |     |     |      |
| Met Gly Gly Cys Thr Val Lys Pro Gln Leu Leu Leu Leu Ala Leu Val   |     |     |      |
| 1   | 5   | 10  | 15   |
| Leu His Pro Trp Asn Pro Cys Leu Gly Ala Asp Ser Glu Lys Pro Ser   |     |     |      |
| 20  | 25  | 30  |      |
| Ser Ile Pro Thr Asp Lys Leu Leu Val Ile Thr Val Ala Thr Lys Glu   |     |     |      |
| 35  | 40  | 45  |      |
| Ser Asp Gly Phe His Arg Phe Met Gln Ser Ala Lys Tyr Phe Asn Tyr   |     |     |      |
| 50  | 55  | 60  |      |
| Thr Val Lys Val Leu Gly Gln Gly Glu Glu Trp Arg Gly Gly Asp Gly   |     |     |      |
| 65  | 70  | 75  | 80   |
| Ile Asn Ser Ile Gly Gly Gly Gln Lys Val Arg Leu Met Lys Glu Val   |     |     |      |
| 85  | 90  | 95  |      |

Met Glu His Tyr Ala Asp Gln Asp Asp Leu Val Val Met Phe Thr Glu  
 100 105 110

Cys Phe Asp Val Ile Phe Ala Gly Gly Pro Glu Glu Val Leu Lys Lys  
 115 120 125

Phe Gln Lys Ala Asn His Lys Val Val Phe Ala Ala Asp Gly Ile Leu  
 130 135 140

Trp Pro Asp Lys Arg Leu Ala Asp Lys Tyr Pro Val Val His Ile Gly  
 145 150 155 160

Lys Arg Tyr Leu Asn Ser Gly Gly Phe Ile Gly Tyr Ala Pro Tyr Val  
 165 170 175

Asn Arg Ile Val Gln Gln Trp Asn Leu Gln Asp Asn Asp Asp Asp Gln  
 180 185 190

Leu Phe Tyr Thr Lys Val Tyr Ile Asp Pro Leu Lys Arg Glu Ala Ile  
 195 200 205

Asn Ile Thr Leu Asp His Lys Cys Lys Ile Phe Gln Thr Leu Asn Gly  
 210 215 220

Ala Val Asp Glu Val Val Leu Lys Phe Glu Asn Gly Lys Ala Arg Ala  
 225 230 235 240

Lys Asn Thr Phe Tyr Glu Thr Leu Pro Val Ala Ile Asn Gly Asn Gly  
 245 250 255

Pro Thr Lys Ile Leu Leu Asn Tyr Phe Gly Asn Tyr Val Pro Asn Ser  
 260 265 270

Trp Thr Gln Asp Asn Gly Cys Thr Leu Cys Glu Phe Asp Thr Val Asp  
 275 280 285

Leu Ser Ala Val Asp Val His Pro Asn Val Ser Ile Gly Val Phe Ile  
 290 295 300

Glu Gln Pro Thr Pro Phe Leu Pro Arg Phe Leu Asp Ile Leu Leu Thr  
 305 310 315 320

Leu Asp Tyr Pro Lys Glu Ala Leu Lys Leu Phe Ile His Asn Lys Glu  
 325 330 335

Val Tyr His Glu Lys Asp Ile Lys Val Phe Phe Asp Lys Ala Lys His  
 340 345 350

Glu Ile Lys Thr Ile Lys Ile Val Gly Pro Glu Glu Asn Leu Ser Gln  
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Ala Glu Ala Arg Asn Met Gly Met Asp Phe Cys Arg Gln Asp Glu Lys  
 370 375 380

Cys Asp Tyr Tyr Phe Ser Val Asp Ala Asp Val Val Leu Thr Asn Pro  
 385 390 395 400

Arg Thr Leu Lys Ile Leu Ile Glu Gln Asn Arg Lys Ile Ile Ala Pro  
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Leu Val Thr Arg His Gly Lys Leu Trp Ser Asn Phe Trp Gly Ala Leu  
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Ser Pro Asp Gly Tyr Tyr Ala Arg Ser Glu Asp Tyr Val Asp Ile Val  
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Gln Gly Asn Arg Val Gly Val Trp Asn Val Pro Tyr Met Ala Asn Val  
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Tyr Leu Ile Lys Gly Lys Thr Leu Arg Ser Glu Met Asn Glu Arg Asn  
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Tyr Phe Val Arg Asp Lys Leu Asp Pro Asp Met Ala Leu Cys Arg Asn  
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Ala Arg Glu Met Thr Leu Gln Arg Glu Lys Asp Ser Pro Thr Pro Glu  
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Thr Phe Gln Met Leu Ser Pro Pro Lys Gly Val Phe Met Tyr Ile Ser  
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Asn Arg His Glu Phe Gly Arg Leu Leu Ser Thr Ala Asn Tyr Asn Thr  
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Ser His Tyr Asn Asn Asp Leu Trp Gln Ile Phe Glu Asn Pro Val Asp  
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Trp Lys Glu Lys Tyr Ile Asn Arg Asp Tyr Ser Lys Ile Phe Thr Glu  
565 570 575

Asn Ile Val Glu Gln Pro Cys Pro Asp Val Phe Trp Phe Pro Ile Phe  
580 585 590

Ser Glu Lys Ala Cys Asp Glu Leu Val Glu Glu Met Glu His Tyr Gly  
595 600 605

Lys Trp Ser Gly Gly Lys His His Asp Ser Arg Ile Ser Gly Gly Tyr  
610 615 620

Glu Asn Val Pro Thr Asp Asp Ile His Met Lys Gln Val Asp Leu Glu  
625 630 635 640

Asn Val Trp Leu His Phe Ile Arg Glu Phe Ile Ala Pro Val Thr Leu  
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Lys Val Phe Ala Gly Tyr Tyr Thr Lys Gly Phe Ala Leu Leu Asn Phe  
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Val Val Lys Tyr Ser Pro Glu Arg Gln Arg Ser Leu Arg Pro His His  
675 680 685

Asp Ala Ser Thr Phe Thr Ile Asn Ile Ala Leu Asn Asn Val Gly Glu  
690 695 700

Asp Phe Gln Gly Gly Gly Cys Lys Phe Leu Arg Tyr Asn Cys Ser Ile  
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| ctgccgtccc gggccccacg tctaaccggg tgctcttcgg ggtctccgcg tctcgcgaga | 180 |
| agtcctcgcc gcaggcctcg ggctttcggg cttaggggcg g atg ggg gac cgc gga | 236 |
| Met Gly Asp Arg Gly   |     |
| 1 5   |     |
| gtg agg ctg ggg ctg ctg atg ccc atg ctc gcc ctg ctc tcc tgg gcg   | 284 |
| Val Arg Leu Gly Leu Leu Met Pro Met Leu Ala Leu Leu Ser Trp Ala   |     |
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| gct agc ctg ggc gta gcg gag gag act ccc tcg cgc atc cca gca gat   | 332 |
| Ala Ser Leu Gly Val Ala Glu Glu Thr Pro Ser Arg Ile Pro Ala Asp   |     |
| 25 30 35  |     |
| aag tta tta gtc ata act gta gca acc aaa gaa aac gat gga ttc cac   | 380 |
| Lys Leu Leu Val Ile Thr Val Ala Thr Lys Glu Asn Asp Gly Phe His   |     |
| 40 45 50  |     |
| aga ttt atg aat tca gcc aag tat ttc aat tat act gtg aag gtt ctt   | 428 |
| Arg Phe Met Asn Ser Ala Lys Tyr Phe Asn Tyr Thr Val Lys Val Leu   |     |
| 55 60 65  |     |
| ggg caa ggg caa gag tgg aga ggt ggt gat ggg atg aac agt att gga   | 476 |
| Gly Gln Gly Gln Glu Trp Arg Gly Gly Asp Gly Met Asn Ser Ile Gly   |     |
| 70 75 80 85   |     |
| ggg ggc cag aag gtg aga tta atg aaa gaa gcc atg gag cac tac gcc   | 524 |
| Gly Gly Gln Lys Val Arg Leu Met Lys Glu Ala Met Glu His Tyr Ala   |     |
| 90 95 100   |     |
| ggg cag gac gat ctg gtc atc ttg ttt act gaa tgt ttt gat gtt ata   | 572 |
| Gly Gln Asp Asp Leu Val Ile Leu Phe Thr Glu Cys Phe Asp Val Ile   |     |
| 105 110 115   |     |
| ttt gct ggt ggg cct gaa gaa ctt ctt aaa aag ttc caa aag aca aat   | 620 |
| Phe Ala Gly Gly Pro Glu Glu Leu Leu Lys Lys Phe Gln Lys Thr Asn   |     |
| 120 125 130   |     |
| cat aaa atc gtc ttt gca gcg gat gcg ctg ttg tgg cca gat aag cgg   | 668 |
| His Lys Ile Val Phe Ala Ala Asp Ala Leu Leu Trp Pro Asp Lys Arg   |     |
| 135 140 145   |     |
| ctg gca gac aag tat cct ggt gtg cac att ggg aaa cgc tac ctg aat   | 716 |
| Leu Ala Asp Lys Tyr Pro Gly Val His Ile Gly Lys Arg Tyr Leu Asn   |     |
| 150 155 160 165   |     |
| tct gga ggc ttt att ggc tat gct ccc tac atc agc cgt ctg gtc cag   | 764 |
| Ser Gly Gly Phe Ile Gly Tyr Ala Pro Tyr Ile Ser Arg Leu Val Gln   |     |
| 170 175 180   |     |
| cag tgg gat ctg cag gat aat gat gac gac cag ctc ttt tac act aaa   | 812 |
| Gln Trp Asp Leu Gln Asp Asn Asp Asp Asp Gln Leu Phe Tyr Thr Lys   |     |
| 185 190 195   |     |



|   |      |
|---|------|
| gtt tac atc gac ccg ctg aaa agg gaa gct ctt aac atc aca ttg gat | 860  |
| Val Tyr Ile Asp Pro Leu Lys Arg Glu Ala Leu Asn Ile Thr Leu Asp |      |
| 200 205 210   |      |
| cac aga tgc aaa att ttc cag gcc ttg aat gga gct aca gac gaa gtt | 908  |
| His Arg Cys Lys Ile Phe Gln Ala Leu Asn Gly Ala Thr Asp Glu Val |      |
| 215 220 225   |      |
| gtt tta aag ttt gaa aat ggt aaa agc aga gtg aag aat aca ttt tat | 956  |
| Val Leu Lys Phe Glu Asn Gly Lys Ser Arg Val Lys Asn Thr Phe Tyr |      |
| 230 235 240 245   |      |
| gaa aca ctg cca gtg gcc atc aat ggg aat ggg ccc acc aaa att ctc | 1004 |
| Glu Thr Leu Pro Val Ala Ile Asn Gly Asn Gly Pro Thr Lys Ile Leu |      |
| 250 255 260   |      |
| ttg aat tac ttt gga aac tat gtt cca aat tca tgg aca cag gaa aat | 1052 |
| Leu Asn Tyr Phe Gly Asn Tyr Val Pro Asn Ser Trp Thr Gln Glu Asn |      |
| 265 270 275   |      |
| ggc tgt gct ctt tgt gac ttt gac aca att gac ctg tct aca gta gat | 1100 |
| Gly Cys Ala Leu Cys Asp Phe Asp Thr Ile Asp Leu Ser Thr Val Asp |      |
| 280 285 290   |      |
| gtc tat ccg aag gta aca cta ggt gtt ttt att gaa caa cca acc ccc | 1148 |
| Val Tyr Pro Lys Val Thr Leu Gly Val Phe Ile Glu Gln Pro Thr Pro |      |
| 295 300 305   |      |
| ttt cta cct cgg ttc ctg gac tta ctg tta aca ctg gat tac cct aaa | 1196 |
| Phe Leu Pro Arg Phe Leu Asp Leu Leu Leu Thr Leu Asp Tyr Pro Lys |      |
| 310 315 320 325   |      |
| gaa gca ctt cga ctc ttt gtc cat aat aaa gaa gtt tat cat gaa aag | 1244 |
| Glu Ala Leu Arg Leu Phe Val His Asn Lys Glu Val Tyr His Glu Lys |      |
| 330 335 340   |      |
| gac atc aaa gcg ttt gtt gat aaa gct aaa cac gac atc agc tct ata | 1292 |
| Asp Ile Lys Ala Phe Val Asp Lys Ala Lys His Asp Ile Ser Ser Ile |      |
| 345 350 355   |      |
| aaa ata gta gga cca gag gaa aat cta agt caa gcg gaa gcc aga aac | 1340 |
| Lys Ile Val Gly Pro Glu Glu Asn Leu Ser Gln Ala Glu Ala Arg Asn |      |
| 360 365 370   |      |
| atg gga atg gat ttc tgc cgt cag gat gaa aag tgt gat tac tac ttt | 1388 |
| Met Gly Met Asp Phe Cys Arg Gln Asp Glu Lys Cys Asp Tyr Tyr Phe |      |
| 375 380 385   |      |
| agt gtg gat gca gat gtt gtt ttg aca aac cca aga act tta aaa att | 1436 |
| Ser Val Asp Ala Asp Val Val Leu Thr Asn Pro Arg Thr Leu Lys Ile |      |
| 390 395 400 405   |      |
| ttg att gaa caa aac agg aag atc att gcc cct ctt gtg aca cgt cat | 1484 |
| Leu Ile Glu Gln Asn Arg Lys Ile Ile Ala Pro Leu Val Thr Arg His |      |
| 410 415 420   |      |
| gga aag ttg tgg tcc aac ttc tgg gga gcc ctg agt cct gat gga tac | 1532 |
| Gly Lys Leu Trp Ser Asn Phe Trp Gly Ala Leu Ser Pro Asp Gly Tyr |      |

| 425   |      |  |  |  | 430 |  |  |  |  | 435 |  |  |  |  |  |
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| tat gct cgt tct gaa gat tac gta gat atc gtt cag gga aac aga gta | 1580 |  |  |  |     |  |  |  |  |     |  |  |  |  |  |
| Tyr Ala Arg Ser Glu Asp Tyr Val Asp Ile Val Gln Gly Asn Arg Val |      |  |  |  |     |  |  |  |  |     |  |  |  |  |  |
| 440 445 450   |      |  |  |  |     |  |  |  |  |     |  |  |  |  |  |
| gga ata tgg aat gtc cca tac atg gct aat gtg tac tta att caa ggg | 1628 |  |  |  |     |  |  |  |  |     |  |  |  |  |  |
| Gly Ile Trp Asn Val Pro Tyr Met Ala Asn Val Tyr Leu Ile Gln Gly |      |  |  |  |     |  |  |  |  |     |  |  |  |  |  |
| 455 460 465   |      |  |  |  |     |  |  |  |  |     |  |  |  |  |  |
| aag acg ctg cga tca gag atg agt gaa agg aac tat ttt gtg cgt gat | 1676 |  |  |  |     |  |  |  |  |     |  |  |  |  |  |
| Lys Thr Leu Arg Ser Glu Met Ser Glu Arg Asn Tyr Phe Val Arg Asp |      |  |  |  |     |  |  |  |  |     |  |  |  |  |  |
| 470 475 480 485   |      |  |  |  |     |  |  |  |  |     |  |  |  |  |  |
| aag ttg gat ccc gac atg tct ctc tgc cgc aat gct cga gac atg acc | 1724 |  |  |  |     |  |  |  |  |     |  |  |  |  |  |
| Lys Leu Asp Pro Asp Met Ser Leu Cys Arg Asn Ala Arg Asp Met Thr |      |  |  |  |     |  |  |  |  |     |  |  |  |  |  |
| 490 495 500   |      |  |  |  |     |  |  |  |  |     |  |  |  |  |  |
| tta caa agg gaa aaa gac tcc ccc act ccg gaa aca ttc caa atg ctc | 1772 |  |  |  |     |  |  |  |  |     |  |  |  |  |  |
| Leu Gln Arg Glu Lys Asp Ser Pro Thr Pro Glu Thr Phe Gln Met Leu |      |  |  |  |     |  |  |  |  |     |  |  |  |  |  |
| 505 510 515   |      |  |  |  |     |  |  |  |  |     |  |  |  |  |  |
| agc ccc cca aag ggt gtg ttt atg tac att tct aac aga cat gaa ttt | 1820 |  |  |  |     |  |  |  |  |     |  |  |  |  |  |
| Ser Pro Pro Lys Gly Val Phe Met Tyr Ile Ser Asn Arg His Glu Phe |      |  |  |  |     |  |  |  |  |     |  |  |  |  |  |
| 520 525 530   |      |  |  |  |     |  |  |  |  |     |  |  |  |  |  |
| gga cgg ctg ata tca act gct aat tac aac act tcc cat ctc aac aat | 1868 |  |  |  |     |  |  |  |  |     |  |  |  |  |  |
| Gly Arg Leu Ile Ser Thr Ala Asn Tyr Asn Thr Ser His Leu Asn Asn |      |  |  |  |     |  |  |  |  |     |  |  |  |  |  |
| 535 540 545   |      |  |  |  |     |  |  |  |  |     |  |  |  |  |  |
| gac ctc tgg cag atc ttt gaa aat ccc gtg gat tgg aag gaa aaa tat | 1916 |  |  |  |     |  |  |  |  |     |  |  |  |  |  |
| Asp Leu Trp Gln Ile Phe Glu Asn Pro Val Asp Trp Lys Glu Lys Tyr |      |  |  |  |     |  |  |  |  |     |  |  |  |  |  |
| 550 555 560 565   |      |  |  |  |     |  |  |  |  |     |  |  |  |  |  |
| ata aac cgt gac tat tca aag att ttc act gaa aat ata gtc gag cag | 1964 |  |  |  |     |  |  |  |  |     |  |  |  |  |  |
| Ile Asn Arg Asp Tyr Ser Lys Ile Phe Thr Glu Asn Ile Val Glu Gln |      |  |  |  |     |  |  |  |  |     |  |  |  |  |  |
| 570 575 580   |      |  |  |  |     |  |  |  |  |     |  |  |  |  |  |
| ccc tgt cca gat gtc ttc tgg ttt ccc ata ttt tct gaa cga gcc tgt | 2012 |  |  |  |     |  |  |  |  |     |  |  |  |  |  |
| Pro Cys Pro Asp Val Phe Trp Phe Pro Ile Phe Ser Glu Arg Ala Cys |      |  |  |  |     |  |  |  |  |     |  |  |  |  |  |
| 585 590 595   |      |  |  |  |     |  |  |  |  |     |  |  |  |  |  |
| gac gag ttg gta gaa gaa atg gaa cat tac ggc aag tgg tcc ggg gga | 2060 |  |  |  |     |  |  |  |  |     |  |  |  |  |  |
| Asp Glu Leu Val Glu Glu Met Glu His Tyr Gly Lys Trp Ser Gly Gly |      |  |  |  |     |  |  |  |  |     |  |  |  |  |  |
| 600 605 610   |      |  |  |  |     |  |  |  |  |     |  |  |  |  |  |
| aag cat cat gac agc cgt ata tct ggt ggc tat gaa aat gtc cca acg | 2108 |  |  |  |     |  |  |  |  |     |  |  |  |  |  |
| Lys His His Asp Ser Arg Ile Ser Gly Gly Tyr Glu Asn Val Pro Thr |      |  |  |  |     |  |  |  |  |     |  |  |  |  |  |
| 615 620 625   |      |  |  |  |     |  |  |  |  |     |  |  |  |  |  |
| gat gac att cat atg aag cag att gac ctg gag aac gtc tgg ctt cac | 2156 |  |  |  |     |  |  |  |  |     |  |  |  |  |  |
| Asp Asp Ile His Met Lys Gln Ile Asp Leu Glu Asn Val Trp Leu His |      |  |  |  |     |  |  |  |  |     |  |  |  |  |  |
| 630 635 640 645   |      |  |  |  |     |  |  |  |  |     |  |  |  |  |  |
| ttt atc cga gag ttt atc gct cca gtt acc ctg aag gtc ttc gcg gga | 2204 |  |  |  |     |  |  |  |  |     |  |  |  |  |  |
| Phe Ile Arg Glu Phe Ile Ala Pro Val Thr Leu Lys Val Phe Ala Gly |      |  |  |  |     |  |  |  |  |     |  |  |  |  |  |
| 650 655 660   |      |  |  |  |     |  |  |  |  |     |  |  |  |  |  |

|  |      |
|--|------|
| tat tac acc aag gga ttt gcc ctg ctg aac ttc gta gtg aag tac tcg    | 2252 |
| Tyr Tyr Thr Lys Gly Phe Ala Leu Leu Asn Phe Val Val Lys Tyr Ser    |      |
| 665 670 675  |      |
| ccc gaa aga cag cgc tcg ctc cgg cct cac cac gat gcg tca acc ttc    | 2300 |
| Pro Glu Arg Gln Arg Ser Leu Arg Pro His His Asp Ala Ser Thr Phe    |      |
| 680 685 690  |      |
| acc atc aac att gct cta aat aat gta gga gag gat ttt cag gga ggt    | 2348 |
| Thr Ile Asn Ile Ala Leu Asn Asn Val Gly Glu Asp Phe Gln Gly Gly    |      |
| 695 700 705  |      |
| gga tgc aaa ttc cta agg tat aat tgc tcc atc gaa tcc ccc cga aaa    | 2396 |
| Gly Cys Lys Phe Leu Arg Tyr Asn Cys Ser Ile Glu Ser Pro Arg Lys    |      |
| 710 715 720 725  |      |
| ggc tgg agc ttc atg cat cct ggg agg ctt act cat cta cac gaa ggg    | 2444 |
| Gly Trp Ser Phe Met His Pro Gly Arg Leu Thr His Leu His Glu Gly    |      |
| 730 735 740  |      |
| ctt cct gtc aaa aat gga aca aga tac att gca gtc tca ttt            | 2486 |
| Leu Pro Val Lys Asn Gly Thr Arg Tyr Ile Ala Val Ser Phe            |      |
| 745 750 755  |      |
| atcgatccct aagttattga ctgaacttaa actgagtggc tctttgagat ggatgactgg  | 2546 |
| cggaacatg tctctgaagt tgtacttgag aagacgagag gaatatttaa ataatgtcac   | 2606 |
| cagaacaacg tcactttggg ccaagcattt gaaaactttt tatataaatt tgttttatgt  | 2666 |
| ttcttaacgt ctgctctgag ccttaaaaca cagggtgaag aagaagagag agggaaaaag  | 2726 |
| tgaaagttgg tatttatctt tgtgctttta ttgtctatga aaatgatgac attttataaa  | 2786 |
| atgttttaggt acaaaggcat gaatgataat cagtaagcct aataatattt tcttatttaa | 2846 |
| ggagaacctg agaagatttt atttttcagt gggagaaata tggaaaatgg ttctaaatga  | 2906 |
| gggtcggcac gtctggaagc ccgggattct gacgcgtact gaatttatgt gtaactttta  | 2966 |
| agccatgctg acctccgggt agattcgctt ttcagtgata aggaagaaaa cccaaagaaa  | 3026 |
| atattgcaca gaggctttcc tcaagcagcc tgggcagatg gccagtggaa gcccatccac  | 3086 |
| tggagatcct cagcttgtga ggcaggtgct cctgtccggt ggaaactggg ccctgtgtg   | 3146 |
| tctccagggc aagctctcag gggaagctca catctgcctg ctttacagag tgcttcaggc  | 3206 |
| gtcagctcca agtcaaacag gatgtgtttt cttctgtttt tcccctctaa ttatagaaaa  | 3266 |
| tagtaaggaa aaatatcagt ttcattgaga ttagtagtac attttactat cttctttttt  | 3326 |
| aacgattaag tacttgaatt ttatatcagg aaaatagttt ttgagcctgt tcttaccttt  | 3386 |
| ggcgcgtagt ggtagttagt ctctttgttt ttcttgagg aggggcattt cttttcctca   | 3446 |
| tcataaacta ctttctcatt cttagtcttg ttattacttt tcctctaccc cactttttta  | 3506 |

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Asn Asp Gly Phe His Arg Phe Met Asn Ser Ala Lys Tyr Phe Asn Tyr  
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Thr Val Lys Val Leu Gly Gln Gly Gln Glu Trp Arg Gly Gly Asp Gly  
65 70 75 80

Met Asn Ser Ile Gly Gly Gly Gln Lys Val Arg Leu Met Lys Glu Ala  
85 90 95

Met Glu His Tyr Ala Gly Gln Asp Asp Leu Val Ile Leu Phe Thr Glu  
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Cys Phe Asp Val Ile Phe Ala Gly Gly Pro Glu Glu Leu Leu Lys Lys  
115 120 125

Phe Gln Lys Thr Asn His Lys Ile Val Phe Ala Ala Asp Ala Leu Leu  
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Trp Pro Asp Lys Arg Leu Ala Asp Lys Tyr Pro Gly Val His Ile Gly  
145 150 155 160

Lys Arg Tyr Leu Asn Ser Gly Gly Phe Ile Gly Tyr Ala Pro Tyr Ile  
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Ser Arg Leu Val Gln Gln Trp Asp Leu Gln Asp Asn Asp Asp Asp Gln  
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Leu Phe Tyr Thr Lys Val Tyr Ile Asp Pro Leu Lys Arg Glu Ala Leu  
195 200 205

Asn Ile Thr Leu Asp His Arg Cys Lys Ile Phe Gln Ala Leu Asn Gly  
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Ala Thr Asp Glu Val Val Leu Lys Phe Glu Asn Gly Lys Ser Arg Val  
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Lys Asn Thr Phe Tyr Glu Thr Leu Pro Val Ala Ile Asn Gly Asn Gly  
245 250 255

Pro Thr Lys Ile Leu Leu Asn Tyr Phe Gly Asn Tyr Val Pro Asn Ser  
260 265 270

Trp Thr Gln Glu Asn Gly Cys Ala Leu Cys Asp Phe Asp Thr Ile Asp  
275 280 285

Leu Ser Thr Val Asp Val Tyr Pro Lys Val Thr Leu Gly Val Phe Ile  
290 295 300

Glu Gln Pro Thr Pro Phe Leu Pro Arg Phe Leu Asp Leu Leu Leu Thr  
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Leu Asp Tyr Pro Lys Glu Ala Leu Arg Leu Phe Val His Asn Lys Glu  
325 330 335

Val Tyr His Glu Lys Asp Ile Lys Ala Phe Val Asp Lys Ala Lys His  
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Asp Ile Ser Ser Ile Lys Ile Val Gly Pro Glu Glu Asn Leu Ser Gln  
355 360 365

Ala Glu Ala Arg Asn Met Gly Met Asp Phe Cys Arg Gln Asp Glu Lys  
370 375 380

Cys Asp Tyr Tyr Phe Ser Val Asp Ala Asp Val Val Leu Thr Asn Pro  
385 390 395 400

Arg Thr Leu Lys Ile Leu Ile Glu Gln Asn Arg Lys Ile Ile Ala Pro  
405 410 415

Leu Val Thr Arg His Gly Lys Leu Trp Ser Asn Phe Trp Gly Ala Leu  
420 425 430

Ser Pro Asp Gly Tyr Tyr Ala Arg Ser Glu Asp Tyr Val Asp Ile Val  
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Gln Gly Asn Arg Val Gly Ile Trp Asn Val Pro Tyr Met Ala Asn Val  
450 455 460

Tyr Leu Ile Gln Gly Lys Thr Leu Arg Ser Glu Met Ser Glu Arg Asn  
465 470 475 480

Tyr Phe Val Arg Asp Lys Leu Asp Pro Asp Met Ser Leu Cys Arg Asn  
485 490 495

Ala Arg Asp Met Thr Leu Gln Arg Glu Lys Asp Ser Pro Thr Pro Glu  
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Thr Phe Gln Met Leu Ser Pro Pro Lys Gly Val Phe Met Tyr Ile Ser  
515 520 525

Asn Arg His Glu Phe Gly Arg Leu Ile Ser Thr Ala Asn Tyr Asn Thr  
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Ser His Leu Asn Asn Asp Leu Trp Gln Ile Phe Glu Asn Pro Val Asp  
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Trp Lys Glu Lys Tyr Ile Asn Arg Asp Tyr Ser Lys Ile Phe Thr Glu  
565 570 575

Asn Ile Val Glu Gln Pro Cys Pro Asp Val Phe Trp Phe Pro Ile Phe  
580 585 590

Ser Glu Arg Ala Cys Asp Glu Leu Val Glu Glu Met Glu His Tyr Gly  
595 600 605

Lys Trp Ser Gly Gly Lys His His Asp Ser Arg Ile Ser Gly Gly Tyr  
610 615 620

Glu Asn Val Pro Thr Asp Asp Ile His Met Lys Gln Ile Asp Leu Glu  
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Asn Val Trp Leu His Phe Ile Arg Glu Phe Ile Ala Pro Val Thr Leu  
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 Lys Val Phe Ala Gly Tyr Tyr Thr Lys Gly Phe Ala Leu Leu Asn Phe  
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 Asp Ala Ser Thr Phe Thr Ile Asn Ile Ala Leu Asn Asn Val Gly Glu  
                     690                    695                    700  
  
 Asp Phe Gln Gly Gly Gly Cys Lys Phe Leu Arg Tyr Asn Cys Ser Ile  
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 Glu Ser Pro Arg Lys Gly Trp Ser Phe Met His Pro Gly Arg Leu Thr  
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 Ala Leu Tyr Ala Ala Leu Ala Ala Leu Glu Glu His Arg Arg Val Ser  
 1                    5                    10                    15  
  
 cac ggt gag ggc ggc ggg gag gag gcg gcg gcc gcc gcc cgg gaa agg 96  
 His Gly Glu Gly Gly Gly Glu Glu Ala Ala Ala Ala Arg Glu Arg  
                     20                    25                    30  
  
 gga tcg gcg tcc ggg gaa ccc ccg tct ggc tcc ggc cgc ggc aag aag 144  
 Gly Ser Ala Ser Gly Glu Pro Pro Ser Gly Ser Gly Arg Gly Lys Lys  
                     35                    40                    45  
  
 atc ttc ggc tgc tcc gag tgc gag aag ctg ttc cgc tca ccg cga gac 192  
 Ile Phe Gly Cys Ser Glu Cys Glu Lys Leu Phe Arg Ser Pro Arg Asp

| 50   | 55  | 60  |      |
|--|-----|-----|------|
| ctg gag cgg cac gtg ctg gtg cac act ggc gag aag ccg ttc ccg tgc    |     |     | 240  |
| Leu Glu Arg His Val Leu Val His Thr Gly Glu Lys Pro Phe Pro Cys    |     |     |      |
| 65   | 70  | 75  | 80   |
| ctg gag tgc ggc aag ttc ttc cgc cac gag tgc tac ctc aag cgc cac    |     |     | 288  |
| Leu Glu Cys Gly Lys Phe Phe Arg His Glu Cys Tyr Leu Lys Arg His    |     |     |      |
|  | 85  | 90  | 95   |
| cga ctg ctg cac ggc acc gag cgg ccc ttc cct tgc cac atc tgc ggc    |     |     | 336  |
| Arg Leu Leu His Gly Thr Glu Arg Pro Phe Pro Cys His Ile Cys Gly    |     |     |      |
|  | 100 | 105 | 110  |
| aag ggc ttc atc acg ctc agc aac ctc tcc agg cac ctg aag ctg cac    |     |     | 384  |
| Lys Gly Phe Ile Thr Leu Ser Asn Leu Ser Arg His Leu Lys Leu His    |     |     |      |
|  | 115 | 120 | 125  |
| cgg ggc atg gac tgactgccag gctgcgtgcg ccctgccctc caccagcct         |     |     | 436  |
| Arg Gly Met Asp  |     |     |      |
| 130  |     |     |      |
| cctggactcg gcctggacca ggggacctcg ggactgcgcg tgaggccccg gccctccaaa  |     |     | 496  |
| tccaaatcca gacgcaggcc ctgaaatgag gggaccctga ctggagaggt gggggccacc  |     |     | 556  |
| aaaaaccac aaaggccccg gagctggggg accacaaaca aacagggtcc ttagctgggg   |     |     | 616  |
| caggggagcc caaatctagg gagagactcc tgagcctgag gtccttgga tgagtgtggg   |     |     | 676  |
| tagccgtaag tccccagac atggggactt tgcagtgagc aatgggtctc cacaagtacc   |     |     | 736  |
| tctcatcttg agagccctaa tactaaaaga tgggcaccca cccccacaa gggaagactg   |     |     | 796  |
| ccccattccc tgagagccat cattcctaac gaccttgatc tggagaatgt ggaggagca   |     |     | 856  |
| tgtccctgaa ttttcctaga tccctccaaa tgccaccac cagagtcact ggtgaccca    |     |     | 916  |
| gaaaatggat atagccgaaa tctgcctttc ccctttttca ttccctgtgc tgaaagaggg  |     |     | 976  |
| accagggtag atgccccctg ccctcgaatc cccctccccc gactgtggaa tggatcgacc  |     |     | 1036 |
| ctaacgatct tccccgcccc aaacactaga atagactggc ctgaaatccc cttgcccagt  |     |     | 1096 |
| agaatggact gatctatgtg cacacacccc catcacatgg aatgggctgg tctaggctgt  |     |     | 1156 |
| ggcctgccac cttccttaga gtgaataggg gggacactcc tttttttttc ctgtagggtg  |     |     | 1216 |
| tgggccggtc cacgcaattt tttatcctgt gaactcattt gagtgggagg tggtagacac  |     |     | 1276 |
| ctgggggtttc cttccctctc tccgtagcat ccgttgggtct ttctctccat ctctgttgg |     |     | 1336 |
| ttgtctgtct ctgtcttcc cccaatccct aggggaaggg ggcatttggc tagggggtgc   |     |     | 1396 |
| ccctgtgagc ctcgaccttg cccctcgtc cctctcccca gtgtttccag gaccccaat    |     |     | 1456 |
| aaaccttgtc ctgtcaaaaa aaaaaaaaaa                                   |     |     | 1486 |



<210> 15  
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 <212> PRT  
 <213> Homo sapiens

<400> 15

Ala Leu Tyr Ala Ala Leu Ala Ala Leu Glu Glu His Arg Arg Val Ser  
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His Gly Glu Gly Gly Gly Glu Glu Ala Ala Ala Ala Ala Arg Glu Arg  
 20 25 30

Gly Ser Ala Ser Gly Glu Pro Pro Ser Gly Ser Gly Arg Gly Lys Lys  
 35 40 45

Ile Phe Gly Cys Ser Glu Cys Glu Lys Leu Phe Arg Ser Pro Arg Asp  
 50 55 60

Leu Glu Arg His Val Leu Val His Thr Gly Glu Lys Pro Phe Pro Cys  
 65 70 75 80

Leu Glu Cys Gly Lys Phe Phe Arg His Glu Cys Tyr Leu Lys Arg His  
 85 90 95

Arg Leu Leu His Gly Thr Glu Arg Pro Phe Pro Cys His Ile Cys Gly  
 100 105 110

Lys Gly Phe Ile Thr Leu Ser Asn Leu Ser Arg His Leu Lys Leu His  
 115 120 125

Arg Gly Met Asp  
 130

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<400> 16

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 gatctcctga cgagtttatt gttggccaaa accaggcttt gattgaacca ggatgaatgc 240

ggggtgttga agtagaatat atatatacat ataaaattgg ttgggagcca cgtgtaccag 300  
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 agaggagccc tctggaaaga aaaggacaga ccctgtgctt tcatgaaagt gaagatctgg 420  
 ctgaaccagt tccacaaggt tactgtatac atagcctgag tttaaaaggc tgtgcccact 480  
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<210> 17  
 <211> 120  
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 <213> Homo sapiens

<400> 17

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Met | Tyr | Thr | Val | Thr | Leu | Trp | Asn | Trp | Phe | Ser | Gln | Ile | Phe | Thr | Phe |
| 1   |     |     |     | 5   |     |     |     |     | 10  |     |     |     |     | 15  |     |
| Met | Lys | Ala | Gln | Gly | Leu | Ser | Phe | Ser | Phe | Gln | Arg | Ala | Pro | Leu | Ile |
|     |     |     | 20  |     |     |     |     | 25  |     |     |     |     | 30  |     |     |
| Phe | His | Arg | Gln | Phe | Leu | Leu | Gln | Gly | Arg | Leu | Asn | Gln | Ala | Lys | Ile |
|     |     |     | 35  |     |     |     | 40  |     |     |     |     | 45  |     |     |     |
| Asn | Thr | His | Trp | Tyr | Thr | Trp | Leu | Pro | Thr | Asn | Phe | Ile | Cys | Ile | Tyr |
|     | 50  |     |     |     |     | 55  |     |     |     |     | 60  |     |     |     |     |
| Ile | Phe | Tyr | Phe | Gln | His | Pro | His | Ser | Ser | Trp | Phe | Asn | Gln | Ser | Leu |
| 65  |     |     |     |     | 70  |     |     |     |     | 75  |     |     |     | 80  |     |
| Val | Leu | Ala | Asn | Asn | Lys | Leu | Val | Arg | Arg | Ser | Lys | Val | Val | Asp | Val |
|     |     |     |     | 85  |     |     |     |     | 90  |     |     |     |     | 95  |     |
| Cys | Thr | Trp | Leu | Pro | Trp | Arg | Ser | Ser | Gly | Asp | Ser | Leu | Phe | Gln | Asn |
|     |     |     | 100 |     |     |     |     | 105 |     |     |     |     | 110 |     |     |
| Pro | Phe | Cys | Thr | Arg | Trp | Leu | Leu |     |     |     |     |     |     |     |     |
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<210> 18  
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 <212> DNA  
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 ctccaccaag aagcccccat aagagtgggt atcctggaca cagaagtgtt gaattgaaat 120  
 ccacagagca ttttacaaga gttctgacct ggatggggta aacctcagtg cacttctttt 180  
 ctgttggcct cagtattact ggattgaaga attgctgctt cttgttagga gggttcatttc 240

|             |            |             |             |            |             |      |
|-------------|------------|-------------|-------------|------------|-------------|------|
| acttatcatt  | acttacaact | tcatactcaa  | agcactgaga  | atttcaagtg | gagtatat    | 300  |
| aagtagactt  | cagtttcttt | gcatcatttc  | tgtattcaat  | ttttttaatt | atttcataac  | 360  |
| cctattgagt  | gttttttaac | taaattaaca  | tggctcgaat  | gaaccgccca | gctcctgtgg  | 420  |
| aagtcacata  | caagaacatg | agattttctta | ttacacacaa  | tccaaccaat | gcgaccttaa  | 480  |
| acaaatztat  | agaggaactt | aagaagtatg  | gagttaccac  | aatagtaaga | gtatgtgaag  | 540  |
| caacttatga  | cactactctt | gtggagaaag  | aaggatatcca | tgttcttgat | tggccttttg  | 600  |
| atgatggtgc  | accaccatcc | aaccagattg  | ttgatgactg  | ggtaagtctt | gtgaaaatta  | 660  |
| agtttcgtga  | agaacctggg | tgttgatttg  | ctgttcattg  | cgttgcaggc | cttgggagag  | 720  |
| ctccagtact  | tgttgcccta | gcattaattg  | aagggtggaat | gaaatacgaa | gatgcagtac  | 780  |
| aattcataag  | acaaaagcgg | cgtggagctt  | ttaacagcaa  | gcaacttctg | tatttgagaga | 840  |
| agtatcgctc  | taaaatgcgg | ctgcgtttca  | aagattccaa  | cggtcataga | aacaactggt  | 900  |
| gcattcaata  | aaattggggg | gcctaattgt  | actggaagtg  | gaacttgaga | tagggcctaa  | 960  |
| tttgttatac  | atattagcca | acatggtggc  | ttagtaagtc  | taatgaagct | tccataggag  | 1020 |
| tattgaaagg  | cagttttacc | aggcctcaag  | ctagacagat  | ttggcaacct | ctgtatttgg  | 1080 |
| gttacagtca  | acctatttgg | atacttggca  | aaagattctt  | gctgtcagca | tataaaatgt  | 1140 |
| gcttgtcatt  | tgtatcaatt | gacctttccc  | caaatacatg  | agtattgagt | tatgacttgt  | 1200 |
| taaatactatt | cccatgccag | aatcttatca  | atacataaga  | aatttaggaa | gattaggtgc  | 1260 |
| caaaataccc  | agcacaatac | ttgtatat    | ttagtaccat  | acagaagtaa | aatcccagga  | 1320 |
| actatgaaca  | ctagacctta | tgtgggtttat | tccttcaatc  | atttcaaaca | ttgaaagtag  | 1380 |
| ggcctacatg  | gttatttgcc | tgctcacttt  | atgtttacat  | ctccacatt  | cataccaata  | 1440 |
| tacgtcaggt  | ttgcttaacc | attgatTTTT  | TTTTTTTTta  | ccaagtctta | cagtgattat  | 1500 |
| tttacgtgtt  | tccatgtatc | tcactttgtg  | ctgtattaaa  | aaaacctcca | ttttgaaaat  | 1560 |
| ctacgttgta  | cagaagcaca | tgtctttaat  | gtcttcagac  | aaaaaagcct | tacattaatt  | 1620 |
| taatgtttgc  | actctgaggt | gcaacttaac  | agggagggcc  | tgagaaaaga | atgggagggg  | 1680 |
| gctattaatt  | atttttagca | aaatgttgcc  | tttgtcttgt  | gcaaacatgt | agaatatgct  | 1740 |
| ctttaattta  | gtaaaatatt | tttttaaaag  | gtagagatgc  | tttggatttg | gtatcataaa  | 1800 |
| cttcctgaaa  | ttcttgaatt | tttttcccat  | actatcaaga  | agtgtgttta | ccacttattt  | 1860 |
| ttgtttgaaa  | gtgtgatttt | ttttttcctt  | cccaacctct  | ccttgcaaaa | aaagaaatgg  | 1920 |
| gtttctgcta  | atgaattgag | cagacatcta  | atattttata  | tgccttttga | gctgtgtaac  | 1980 |

|             |             |            |            |             |             |      |
|-------------|-------------|------------|------------|-------------|-------------|------|
| ttaatatattg | gataacttgac | aatttgTTTT | attatgtaat | tgataaaatg  | gtgatgtgta  | 2040 |
| ttaatgttag  | ttcaaccata  | tatttatact | gtctggggat | gtgtggttat  | agttctgtgg  | 2100 |
| gagaaataat  | tttgtcagt   | ttcaccagct | tgtaaaaact | tagtgcgaga  | gctgaaacat  | 2160 |
| ctaaataaat  | aatgacatgc  | atztatcatc | attgagattg | gtttgcttaa  | aattaactta  | 2220 |
| ttttgtagaa  | gacaaaatga  | attgcacttc | acttaatgtg | tgtcctcatc  | tttttacaaa  | 2280 |
| taaatgaagg  | attataaatg  | atgtcagcat | tttagtaaac | ttttagacaa  | aatttgttag  | 2340 |
| ggtcattcat  | gaaaacttta  | atactaaaag | cactttccat | tataactttt  | ttaaagggtct | 2400 |
| agataatttt  | gaaccaattt  | attattgtgt | actgaggaga | aataatgtat  | agtagaggac  | 2460 |
| agccttggtt  | tgtaaagctc  | agttccacta | gttcatgggt | ttgtgcaact  | tttgagcctc  | 2520 |
| agttttctcc  | tttgcaaatt  | aataattaca | tacctttata | gattttgaaa  | ttaatttaaa  | 2580 |
| tattagtatt  | tggacatgaa  | ggcttaatgt | taagtttcct | ttaatgatcc  | acaataatcc  | 2640 |
| cTTtgatcac  | gttaatctaa  | atctagatgt | cTTtgTctaa | TTTTTTTTga  | atagcagtta  | 2700 |
| taaatgtaaa  | ggactcaaag  | tttaagtaaa | aagtgatact | ccaccttggtg | tttcaaagaa  | 2760 |
| tttagttcca  | cctcttcata  | ccagtttaac | acttaatata | tttcattgga  | ttttagacag  | 2820 |
| ggcaaaagga  | agaacagggg  | cctctggagg | cccttggtta | tttaaactct  | ggattatttg  | 2880 |
| tgatagtaat  | cacaaatTTT  | tggctaattt | ttaacctgag | gttttgTTTT  | TTTTTTTaaa  | 2940 |
| ggaaatgcag  | cctagtcttg  | agaacataat | tttatataat | caattactaa  | atgttaaact  | 3000 |
| attaccacac  | agcccataaa  | acagcatttg | cgtttattga | gagagaggat  | gtgccatcat  | 3060 |
| gattaatgaa  | aactatcttt  | tgagtttgaa | aagaaattaa | tttgcagtgt  | ttggattgta  | 3120 |
| tatatgggtc  | taaaaataaa  | ttaatttact | ttataaacct | tatctgtaca  | ttatacgatg  | 3180 |
| tgatgaaatt  | tgctTTTTat  | ccaaatatTT | tgtatcttgt | aaatatggct  | aattatagga  | 3240 |
| atgcctataa  | tacatcttag  | attccttata | tctaataaga | gttcaaagag  | ttatgagttg  | 3300 |
| aagtcttgaa  | tgcaggaaac  | tatctgatag | tgttctaaaa | tttggttact  | tggggttgga  | 3360 |
| tacccttagt  | gggatgatgt  | aaatagaggc | tagctaccta | ggcttgtcta  | tagcaaccat  | 3420 |
| aatgttgatg  | taagtaatgc  | ggttactgaa | tcataagaaa | atgccatctc  | tttttagttg  | 3480 |
| aaggaaaaact | ctggaagtag  | gtgccattgg | tcattctgca | gtgcactgca  | accattgttt  | 3540 |
| cccctagtgc  | cctcttttcc  | ctagggcatt | gctctcctat | tcccacgcct  | taacacagct  | 3600 |
| ctatacctag  | aagcagccag  | cccaggcatg | cagtcacatt | taatcacatc  | ccccttctag  | 3660 |
| agtgcTTcaa  | aatgatgtag  | tccctcaact | tggctaaaga | atctcaatct  | cttgaaattt  | 3720 |

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|-------------|------------|------------|-------------|------------|-------------|------|
| atTTTTTTTaa | tgTcatattc | atctggtaaa | tatctactgt  | ttgccaggca | tttaagaata  | 3780 |
| tggcaaagaa  | cataaaagat | ggtgtcacca | gatttttggtc | accaatgagt | acccgacccg  | 3840 |
| ttgccatgat  | taagagagaa | tgctttctat | tggagtttca  | ggaaatataa | tttgagaata  | 3900 |
| ctttaaaggg  | aagtggaagt | ataagtgaat | gatatTTTTc  | ttttacatgt | aaacaatgaa  | 3960 |
| gttattttcaa | agttaagttt | taaacaaaat | ccatgaagta  | gtgtctgcc  | tacatgttaa  | 4020 |
| tattctacat  | tcttgcttcc | cttaaattaa | tatgtttgtg  | tgtatatatg | tgccctcacac | 4080 |
| ctgaattgaa  | aattaaagac | tggtttaaaa | gtggtttaaa  | agtgacattt | aatgtttctc  | 4140 |
| cattacgttt  | ggggtaacca | gcctaagtgg | aatcttgga   | ggaaagtaag | ggaaaaactt  | 4200 |
| gtatttgcct  | tcaatgaatt | aaaccagtga | tatgtttaac  | gtatgaatga | aaggattgat  | 4260 |
| ggtgatttta  | taattatata | tattgccgca | gtaaccagtt  | aataaattga | tagctaccat  | 4320 |
| ttaaaaaaaa  | aaaaaaaaaa | aa         |             |            |             | 4342 |

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 <212> DNA  
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| gttttggtgga | ggaaattgaa actaattgct aaattgtag taaccagtgc attaaactagg 120   |
| accctactga  | gtggactgaa agaatcgaaa atgtttaact ggttgagagg caatgatgtt 180   |
| gcaaattgggg | tattcttcaa, agctccttct ttttttaaact cttcaaaggc aattattctg 240 |
| aatgtaaaact | acagaccaa ttgcagtctt ctgtaagcat ttcagagatt acctcaaata 300    |
| ttttttgatt  | aaaaaactct tccgtggtct tttgtgcttc agaactaccc agtacaacag 360   |
| ggtcttcagc  | ctgctcagga tctctaaaga gagctagcac acagtcagcc aactttggct 420   |
| gcttcaactc  | ctaggaacaa gaaatgatgc tgagataatt tgtctggcag gtattatcag 480   |
| cccacaatga  | ctgctgtcat ttagcctcaa aatgtttatt ttttttttta caatgctgta 540   |
| tttctttaga  | accttcctat tccgagtgtg gaccctaggc cagccccata gacttcccct 600   |
| ggggacttgt  | cagaaatgca taattttagg cccacccca gacctgttg accagaatct 660     |
| tcatttaaca  | agatgccag gtgattcatt catgtttgag aagctctgct ttaaatcact 720    |
| aaagcagtta  | ctgagtaatt actaccatca tgactctgaa gagctcctat agccttcaaa 780   |
| tgcacctaac  | tctactctaa aggcaaatgt cctcactggg aaatctgac tgctgtttca 840    |
| gagaagtgca  | gggctacaca gtgtcttaca ctctatcta ttgatgtttc ttggttttgc 900    |

ctggtaatct gctgcttaaa tggattatatt gatgacatat tgatattaaa acagtcctat 960

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<220>  
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 <222> (3)..(3)  
 <223> Xaa is Asp or Ser

<400> 20

Gly Gly Xaa Phe Gly Gly  
 1 5

<210> 21  
 <211> 551  
 <212> PRT  
 <213> Homo sapiens

<400> 21

Met Ala Glu Gly Glu Asn Glu Val Arg Trp Asp Gly Leu Cys Ser Arg  
 1 5 10 15

Asp Ser Thr Thr Arg Glu Thr Ala Leu Glu Asn Ile Arg Gln Thr Ile  
 20 25 30

Leu Arg Lys Thr Glu Tyr Leu Arg Ser Val Lys Glu Thr Pro His Arg  
 35 40 45

Pro Ser Asp Gly Leu Ser Asn Thr Glu Ser Ser Asp Gly Leu Asn Lys  
 50 55 60

Leu Leu Ala His Leu Leu Met Leu Ser Lys Arg Cys Pro Phe Lys Asp  
 65 70 75 80

Val Arg Glu Lys Ser Glu Phe Ile Leu Lys Ser Ile Gln Glu Leu Gly  
 85 90 95

Ile Arg Ile Pro Arg Pro Leu Gly Gln Gly Pro Ser Arg Phe Ile Pro  
 100 105 110

Glu Lys Glu Ile Leu Gln Val Gly Ser Glu Asp Ala Gln Met His Ala  
 115 120 125

Leu Phe Ala Asp Ser Phe Ala Ala Leu Gly Arg Leu Asp Asn Ile Thr  
 130 135 140

Leu Val Met Val Phe His Pro Gln Tyr Leu Glu Ser Phe Leu Lys Thr

|                 |                     |                 |                 |     |  |     |
|-----------------|---------------------|-----------------|-----------------|-----|--|-----|
| 145             |                     | 150             |                 | 155 |  | 160 |
| Gln His Tyr Leu | Leu Gln Met Asp Gly | Pro Leu Pro Leu | His Tyr Arg     |     |  |     |
|                 | 165                 | 170             | 175             |     |  |     |
| His Tyr Ile Gly | Ile Met Ala Ala     | Ala Arg His Gln | Cys Ser Tyr Leu |     |  |     |
|                 | 180                 | 185             | 190             |     |  |     |
| Val Asn Leu His | Val Asn Asp Phe     | Leu His Val Gly | Gly Asp Pro Lys |     |  |     |
|                 | 195                 | 200             | 205             |     |  |     |
| Trp Leu Asn Gly | Leu Glu Asn Ala     | Pro Gln Lys Leu | Gln Asn Leu Gly |     |  |     |
|                 | 210                 | 215             | 220             |     |  |     |
| Glu Leu Asn Lys | Val Leu Ala His     | Arg Pro Trp Leu | Ile Thr Lys Glu |     |  |     |
|                 | 225                 | 230             | 235             |     |  | 240 |
| His Ile Glu Gly | Leu Leu Lys Ala     | Glu Glu His Ser | Trp Ser Leu Ala |     |  |     |
|                 | 245                 | 250             | 255             |     |  |     |
| Glu Leu Val His | Ala Val Val Leu     | Leu Thr His Tyr | His Ser Leu Ala |     |  |     |
|                 | 260                 | 265             | 270             |     |  |     |
| Ser Phe Thr Phe | Gly Cys Gly Ile     | Ser Pro Glu Ile | His Cys Asp Gly |     |  |     |
|                 | 275                 | 280             | 285             |     |  |     |
| Gly His Thr Phe | Arg Pro Pro Ser     | Val Ser Asn Tyr | Cys Ile Cys Asp |     |  |     |
|                 | 290                 | 295             | 300             |     |  |     |
| Ile Thr Asn Gly | Asn His Ser Val     | Asp Glu Met Pro | Val Asn Ser Ala |     |  |     |
|                 | 305                 | 310             | 315             |     |  | 320 |
| Glu Asn Val Ser | Val Ser Asp Ser     | Phe Phe Glu Val | Glu Ala Leu Met |     |  |     |
|                 | 325                 | 330             | 335             |     |  |     |
| Glu Lys Met Arg | Gln Leu Gln Glu     | Cys Arg Asp Glu | Glu Glu Glu Ala | Ser |  |     |
|                 | 340                 | 345             | 350             |     |  |     |
| Gln Glu Glu Met | Ala Ser Arg Phe     | Glu Ile Glu Lys | Arg Glu Ser Met |     |  |     |
|                 | 355                 | 360             | 365             |     |  |     |
| Phe Val Phe Ser | Ser Asp Asp Glu     | Glu Val Thr Pro | Ala Arg Ala Val |     |  |     |
|                 | 370                 | 375             | 380             |     |  |     |
| Ser Arg His Phe | Glu Asp Thr Ser     | Tyr Gly Tyr Lys | Asp Phe Ser Arg |     |  |     |
|                 | 385                 | 390             | 395             |     |  | 400 |
| His Gly Met His | Val Pro Thr Phe     | Arg Val Gln Asp | Tyr Gln Trp Glu |     |  |     |
|                 | 405                 | 410             | 415             |     |  |     |
| Asp His Gly Tyr | Ser Leu Val Asn     | Arg Leu Tyr Pro | Asp Val Gly Gln |     |  |     |
|                 | 420                 | 425             | 430             |     |  |     |
| Leu Ile Asp Glu | Lys Phe His Ile     | Ala Tyr Asn Leu | Thr Tyr Asn Thr |     |  |     |
|                 | 435                 | 440             | 445             |     |  |     |
| Met Ala Met His | Lys Asp Val Asp     | Thr Ser Met Leu | Arg Arg Ala Ile |     |  |     |
|                 | 450                 | 455             | 460             |     |  |     |

Trp Asn Tyr Ile His Cys Met Phe Gly Ile Arg Tyr Asp Asp Tyr Asp  
465 470 475 480

Tyr Gly Glu Ile Asn Gln Leu Leu Asp Arg Ser Phe Lys Val Tyr Ile  
485 490 495

Lys Thr Val Val Cys Thr Pro Glu Lys Val Thr Lys Arg Met Tyr Asp  
500 505 510

Ser Phe Trp Arg Gln Phe Lys His Ser Glu Lys Val His Val Asn Leu  
515 520 525

Leu Leu Ile Glu Ala Arg Met Gln Ala Glu Leu Leu Tyr Ala Leu Arg  
530 535 540

Ala Ile Thr Arg Tyr Met Thr  
545 550